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August 14, 2017

**VIA ELECTRONIC FILING**

The Honorable Jocelyn Boyd  
Chief Clerk/Administrator  
**Public Service Commission of South Carolina**  
101 Executive Center Drive  
Columbia, South Carolina 29211

RE: Quarterly Report of South Carolina Electric & Gas Company Concerning  
Construction of V.C. Summer Nuclear Station Units 2 and 3

Dear Ms. Boyd:

South Carolina Electric & Gas Company ("SCE&G" or "Company") is required under S.C. Code Ann. § 58-33-277 (2015) to file reports quarterly with the South Carolina Office of Regulatory Staff concerning, among other things, the progress of construction of V.C. Summer Nuclear Station Units 2 and 3. SCE&G must also file, pursuant to Order No. 2009-104(A), a copy of its quarterly reports with the Public Service Commission of South Carolina.

Today is the deadline for filing the Company's quarterly report for the quarter ending June 30, 2017. In compliance with its legal obligations referenced above, enclosed you will find a copy of SCE&G's report for the quarter ending June 30, 2017.

If you have any questions, please do not hesitate to contact us.

Very truly yours,

K. Chad Burgess

KCB/kms  
Enclosure

cc: Shannon Bowyer Hudson, Esquire  
Jeffrey M. Nelson, Esquire  
(both via electronic mail and U.S. First Class Mail)

## **V.C. Summer Nuclear Station Units 2 & 3**

### **Quarterly Report to the South Carolina Office of Regulatory Staff Submitted by South Carolina Electric & Gas Company Pursuant to Public Service Commission Order No. 2009-104(A)**

**Quarter Ending June 30, 2017**

#### **I. Introduction and Summary**

##### **A. Introduction**

This quarterly report concerning the status of the construction of V.C. Summer Nuclear Station (VCSNS) Units 2 and 3 (the Units) is submitted by South Carolina Electric & Gas Company (SCE&G or the Company) to the Public Service Commission of South Carolina (Commission) and the South Carolina Office of Regulatory Staff (ORS). It is submitted in satisfaction of the requirements of S.C. Code Ann. § 58-33-277 (2015) and the terms of Commission Order No. 2009-104(A). All amounts set forth in this Quarterly Report are based on SCE&G's existing 55% interest, except where expressly stated to be based upon 100% of the cost.

In light of the bankruptcy filing by Westinghouse Electric Company, LLC (WEC or Westinghouse), and the decision by the South Carolina Public Service Authority (Santee Cooper) to suspend its participation in the project, SCE&G determined on July 31, 2017, to instruct its contractors Fluor Corporation and Westinghouse to cease work on the project except for work necessary to safely demobilize the workforce and stabilize the site. On August 1, 2017, SCE&G filed with the Commission its Petition for Prudency Determination Regarding Abandonment, Amendments to the Construction Schedule, Capital Cost Schedule and Other Terms of the BLRA Orders For VC Summer Units 2 & 3 And Related Matters (Abandonment Update Petition). On August 9, 2017, ORS moved to dismiss the Abandonment Update Petition. A hearing date on that matter has not been set.

In light of the current status of the matter, the financial schedules presented here reflect amounts spent through June 30, 2017 and do not include forecasted amounts thereafter.

##### **B. Structure of Report and Appendices**

The current reporting period is the quarter ending June 30, 2017. Unless otherwise stated, the information set forth in this report is current as of June 30, 2017. The report is divided into the following sections:

Section I: Introduction and Summary;

Section II: Progress of Construction of the Units;

Section III: Anticipated Construction Schedules;

Section IV: Schedules of the Capital Costs Incurred Including Updates to the Information Required by S.C. Code Ann. § 58-33-270(B)(6) (the Inflation Indices);

Section V: Updated Schedule of Anticipated Capital Costs; and

Section VI: Conclusion.

**Appendices 1, 2, and 4** to this report contain detailed financial, milestone and other information updating the schedules approved by the Commission in Order No. 2016-794. For reference purposes, **Appendix 3** provides a copy of the capital cost schedule for the project as approved in Order No. 2016-794. **Appendix 5** provides a list of the License Amendment Requests (LARs) filed by SCE&G with the Nuclear Regulatory Commission (NRC).

Attached to the end of the report is a glossary of acronyms and defined terms used.

## 1. Construction Schedule and Milestones

**Milestones.** Order No. 2016-794 established that the substantial completion dates of the two Units are the only Base Load Review Act (BLRA) milestones left to complete. In light of the decision to abandon the project, substantial completion of the Units is no longer contemplated and construction milestones have not been updated.

**Construction Costs and Cost Forecasts.** Spending through June 30, 2017, reflects actual amounts. In addition, the approved capital cost targets have not been adjusted to reflect the currently reported historical escalation rates.

## II. Progress of Construction of the Units

### A. Westinghouse Bankruptcy

On March 29, 2017, WEC filed for bankruptcy in the Southern District of New York. In its filings, WEC stated that it intended to exit the new nuclear construction business. In connection with the bankruptcy filing, SCE&G, Santee Cooper and WEC entered into an Interim Assessment Agreement (IAA) to allow the construction and design of the Project to continue pending SCE&G's and Santee Cooper's evaluation of their options for continuing or cancelling the project. The IAA was for a 30-day term. On April 28, 2017, the IAA was amended. The primary amendment was the extension of the term of the IAA through June 26, 2017, subject to bankruptcy procedures. The IAA was subsequently extended to August 10, 2017.

After the end of the period, on July 27, 2017, SCE&G and Santee Cooper signed an agreement with Westinghouse's parent company, Toshiba Corporation, whereby Toshiba

will pay a total of approximately \$2.2 billion in damages for Westinghouse's breach of the Engineering, Procurement, and Construction Agreement (EPC Contract). SCE&G's 55% share of these prospective payments is approximately \$1.2 billion. Those payments will be made over several years.

During the period, SCE&G completed its quantitative evaluation of options for continuing or abandoning the Units. Management was evaluating the qualitative risk factors when Santee Cooper's board voted to "suspend construction" on the project. SCE&G had previously determined that it was not beneficial or feasible for the Company to continue the project without Santee Cooper bearing its share of the costs and risks of construction. On July 31, 2017, in response to Santee Cooper's decision, SCE&G's board voted to file a plan of abandonment for the project with the Commission under S.C. Code Ann. § 58-33-280(K) and instructed Westinghouse and Fluor to cease their construction efforts accordingly. On July 31, 2017, SCE&G and Santee Cooper gave notice of the termination of the IAA.

## **B. Construction**

**Workforce:** There were approximately 5,100 contractor and subcontractor personnel on site prior to abandonment.

**Project Completion:** At the close of the period, WEC reported the project to be 66.6% complete. During the period, completion of the construction advanced by 2.5%.

**Chart E** provides completion percentage and change in completion percentages by functional area.

**CHART E**

<b><u>Completion Percentages</u></b>			
	<b>% Complete 1st Quarter 2017</b>	<b>% Complete 2nd Quarter 2017</b>	<b>% Change</b>
Engineering	96.0%	97.1%	+1.1%
Procurement	88.2%	91.8%	+3.6%
Construction	34.3%	36.0%	+1.7%
Start-up	8.6%	9.6%	+1.0%
<b>Total<sup>1</sup></b>	<b>64.1%</b>	<b>+66.6%</b>	<b>+2.5%</b>

<sup>1</sup> Each Phase has its own Phase Percent Complete out of 100% and its own calculation method. The Phase Percent Completes are weighted and aggregated to become the Total Percent Complete.

**Productivity:** The productivity factor for the project had not been reported at the time of termination of the IAA.

**Critical Paths:** As of the close of the period, the Unit 2 critical path ran through the erection of concrete walls that interface with the Auxiliary Building and Shield Building. The Unit 2 secondary critical path ran through the Shield Building Panels and concrete to the top of the Shield Building and continued through the air inlet and tension ring installation. The focus was on delivery dates of mechanical and floor sub-modules to support the critical path work.

The Unit 3 critical path ran through the placement of Shield Building concrete to support the installation of the upper horizontal Shield Building transition panels at elevation 149', and continued to placement of the Passive Containment Cooling Water Storage Tank (PCCWST) to fuel load, then to final startup testing and Substantial Completion.

### **1. Unit 2 Inside-Containment Vessel (CV) Construction**

During the period, work was completed on concrete Layers 8, 9, and 10 West within the Unit 2 CV. Concrete placement was completed for the CA01 module. The Unit 2 Steam Generator No. 1 was set in place. Welding of the Unit 2 Reactor Coolant System Hot and Cold Legs to the Reactor Vessel and to Steam Generator No. 1 was underway.

Unit 2 CV Ring 3 was lifted and set in place. Welding it to CV Ring 2 is underway.

Acceptance rates based on the Radiographic Testing (RT) of welds on the Units 2 and 3 CV Rings and Top Head remain above 99%. Fabrication for the CV Top Head for Unit 2 is complete.

### **2. Unit 2 Shield Building Construction**

Unit 2 Shield Building Panel Course 6 was installed and welded in the "wedge area" at the intersection of the Containment Building and the Auxiliary area and other locations.

### **3. Unit 2 Annex Building**

Construction of the Annex Building continues with the placement of multiple concrete walls and the installation of decking, piping, HVAC ductwork, and supplemental steel. The HVAC ducts and electrical commodities are being installed, and the steel sprayed with fire protection coating.

### **4. Unit 2 Auxiliary Building**

Concrete was placed for multiple walls and floors in the Unit 2 Auxiliary Building.

Structural steel, electrical commodities, piping and HVAC ducts and supports are being installed. The completion of CA20 weld-out continues. Mechanical Modules C33 and 35 were set inside the Containment Building for Unit 2.

#### **5. Unit 2 Turbine Building**

Concrete work is nearing completion. Wall girders, duct banks, stairs, ladders, cable raceways, piping and pipe supports were installed in multiple locations. The primary overhead crane was energized, and work began to reeve the cable required for operation of the crane. Installation of the roof decking continued, and the installation of the deck roof rafters is complete.

#### **6. Unit 3 Nuclear Island (NI)**

Concrete Layers 6W and 6A were placed within the Unit 3 CV. Work is progressing to install commodities and rebar commenced for portions of the north and east side of the Auxiliary Building.

#### **7. Unit 3 Containment Vessel (CV)**

Installation of structural steel platforms on the inside of Unit 3 CV Ring 2 is progressing.

#### **8. Unit 3 Auxiliary and Annex Building**

The placement of concrete for Auxiliary Building walls and floors and installation of piping and erection of structural steel continued. Backfilling proceeded around the Auxiliary Building and other structures in the Unit 3 NI.

#### **9. Unit 3 Turbine Building**

Structural steel platforms were set in the Unit 3 Turbine Building. All the Condensers have been set and the water boxes installed. The Auxiliary Boiler for Unit 3 was set.

#### **10. Unit 3 Shield Building**

Course 2, 3 and 4 of Shield Building Panels were installed and concrete placed.

#### **11. Cooling Towers**

All four Cooling Towers are structurally complete. Electric work on the Units' four Cooling Towers is approximately 92% complete.

#### **12. Offsite Water System (OWS)**

Storage tank 3A interior coatings and foundation repair continue.

### **13. Service Building**

Work on the Service Building by M. B. Kahn construction is substantially complete, and the building is scheduled for occupancy at the end of August. Construction is ahead of schedule and within budget.

#### **C. Module and Shield Building Panel Fabrication and Assembly**

The on-site assembly of structural floor modules remains a potential critical path item for the project, as does the quality and fabrication schedule of mechanical modules.

##### **1. Mechanical and Submodule Production and Installation**

Fifty (50) of 52 Unit 2 mechanical modules have been delivered to the site, as have 38 of the Unit 3 mechanical modules. Fifty-eight percent (58%) of the Unit 2 mechanical modules have been installed as have 27% of the Unit 3 mechanical modules.

##### **2. Unit 3 Structural Modules and Submodules**

Fabrication of Unit 3 Structural Module CA03 is complete, and it is awaiting installation. With this, all of the large structural modules for both Units are complete.

##### **3. Shield Building Panels**

One hundred sixty (160) of the 167 Shield Building Panels for the Unit 2 Shield Building have been received on site from Newport News Industrial (NNI). Eighty-four (84) of the Unit 3 Shield Building Panels have been received. In total, 73% of the Shield Building Panels for both Units are on site.

##### **4. Unit 2 and Unit 3 Air Inlet and Tension Rings**

Fabrication began on nine (9) of the 43 Unit 2 Air Inlet Panels.

##### **5. Conclusion**

SCE&G continues to monitor the fabrication and delivery process related to submodules, mechanical modules and Shield Building Panels. In addition to its other Quality Assurance/Quality Control (QA/QC) resources, SCE&G maintains an inspector on site at a variety of fabrication sites around the country.

#### **D. Equipment and Fabrication**

Approximately 93% of major equipment for both Units has been delivered to the site. Based on a revised baseline report, approximately 96% of the valves and 75% of auxiliary equipment for the project have been delivered to the site.

## **1. Reactor Coolant System (RCS)**

All the Steam Generators, Pressurizers, Reactor Vessels, Reactor Closure heads, RCS Piping, Core Make-up Tanks and Accumulators necessary for the project are on site.

## **2. Reactor Coolant Pumps (RCPs)**

Two of four Unit 2 RCPs have arrived on site. The remaining two Unit 2 RCPs are completed, packaged, and awaiting shipment. Final assembly and testing are in process for the four Unit 3 RCPs. The current delivery schedule for these items supports construction need dates.

## **3. Passive Residual Heat Removal (PRHR) Heat Exchangers**

The Unit 2 PRHR Heat Exchanger was received on site. The Unit 3 PRHR Heat Exchanger final paperwork uncovered questions regarding non-destructive test documentation that is being reviewed by WEC. Current assessments indicate that resolution will not impact project construction need dates.

## **4. Squib Valves**

All Unit 2 14-inch and 8-inch squib valves have been received on site. Assembly is complete on the Unit 3 14-inch squib valves and continues on the 8-inch squib valves. The delivery dates for these valves support construction need dates.

## **5. Information Technology**

**Handover and Turnover of Proprietary Information.** SCE&G is preparing for the second phase of the implementation of the pull-in interface that will allow for loading of handover and turnover documents into the Configuration Management Information System (CMIS) or the Records Management System (Filenet). WEC began providing historical records to use in developing requirements and in conducting comprehensive end-to-end testing of the applicable interfaces.

**Configuration Management Information System (CMIS).** SCE&G has completed requested modifications to SmartPlant Foundation to support engineering documents and completed modifications to systems external to SmartPlant Foundation in preparation for Information Turnover.

**Work Management System (WMS).** All computerized maintenance management system (CMMS) modules are in the final stages of testing and are scheduled to be moved to production in the third quarter.

**Cyber Security.** The cyber security monitoring system is in design. WEC is revising cyber security assets identification report based on comments.



**Infrastructure.** Information Services & Technology (IST) continues to provide support and input for the Service Building to support occupancy later in 2017. IST continues to work with Operations and the vendor on the Offsite Water Treatment Facility to allow for remote vendor support and appropriate cyber security controls. IST participated in tests in Charlotte of the Emergency Preparedness System (EPS) and will continue to be involved in discussions with Westinghouse regarding the design, testing, and implementation.

## **E. Quality Systems**

### **1. Supplier Oversight**

SCE&G Quality representatives conducted quality assurance observations at the following supplier facilities:

- Paxton Vierling Steel—WEC TEC Supplier Quality Oversight Surveillance.
- CB&I-Laurens—Weekly Oversight of Westinghouse/WEC TEC.
- Curtis Wright—EMD—Witness Hold Points for Reactor Coolant Pump.
- Turner Industries—Stand-up activities for new supplier of ASME Section III Pipe Spool.
- SPX Flow US LLC Copes Vulcan—10 CFR 50 Appendix B Program Audit of AP 1000 Squib Valve Supplier.
- Consolidated Power Supply, Inc.—WEC TEC Supplier Quality Oversight Surveillance.
- WEC TEC Commercial Grade Dedication Meeting Attendance.
- AECON—Supplier Readiness Review.
- WEC TEC Supplier Quality Committee Meeting Attendance.

### **2. Significant Issues Identified**

Restrictions were implemented on CB&I-Laurens in response to emergent issues including one (1) Notice of Violation (NOV) and six (6) Notices of Nonconformances (NON) resulting from a January 2017 NRC inspection, as well as, nine (9) Audit Findings from a February 2017 Westinghouse Audit. SCE&G Supplier Quality is overseeing the CB&I-Laurens Corrective Actions to address the findings documented in the NRC (NOV/NONs) and Westinghouse Supplier Correction Action Requests (SCARs) through routine observations and weekly status meetings. CB&I-Laurens Corrective Action Plans

are progressing, including recent issuance of a Root Cause Analysis Report for the 10 C.F.R. 50 Appendix B Criterion 1 Notice of Nonconformance.

### **3. On Site Quality Surveillance Activity**

SCE&G personnel completed 337 surveillances (including QA/QC surveillances) of construction activities at Jenkinsville. These surveillances were related to module installation and welding, electrical support activities, traceability of materials, non-destructive examination, subcontractor activities, CB&I-Laurens pipe spool ultrasonic testing, reactor coolant system welding, Passive Core Cooling System (PXS) piping installation, Steam Generator installation activities, Corrective Action Program Oversight, Preventative Maintenance and Preservice Inspection activities. No significant issues were identified.

### **4. Quality Systems Audit Activity**

SCE&G personnel conducted a quality assurance audit that included 10 CFR 50 Appendix B criteria of Westinghouse/WECTEC on site and an audit of site preparation of modules. No significant conditions adverse to quality were identified.

SCE&G continues to monitor the status of issues related to the Westinghouse corrective action program and the issues related to preventative maintenance and storage. During the quarter, SCE&G performed ten surveillances related to the corrective action program and two surveillances specific to storage and issues related to stored material and equipment. SCE&G plans to conduct oversight and surveillances in these areas in the third quarter of 2017.

## **F. Licensing and Permitting and Regulatory Proceedings**

### **1. NRC Inspections**

During the period, the NRC Resident Inspectors issued the First Quarter 2017 Integrated Inspection Report. The report documented two findings: (1) a Green Non-Cited Violation (NCV) for failure to translate design change modifications into output design and construction drawings; and (2) a Green NCV for failure to provide adequate instructions and procedures for safety-related components fabricated on site. A Green finding is the least significant in the NRC Construction Reactor Oversight Process. It qualitatively indicates licensee performance is acceptable and that NRC Construction Reactor Oversight Process cornerstone objectives are fully met. In the Second Quarter of 2017, the NRC also conducted inspections related to Reactor Vessel Material Surveillance Program, Welding, and Component Interface Module. No documentable findings were identified in these inspections.

### **2. License Amendment Requests (LARs)**

The NRC has granted a total of 79 LARs, eight of which were granted during the

reporting period. Twenty-eight LARs were pending at the close of the period. SCE&G filed twelve LARs with the NRC and withdrew two LARS during the period. For ease of reference, a report that tabulates all the LARs submitted by SCE&G to the NRC as of June 30, 2017, is attached as Appendix 5.

### **3. Inspections, Tests, Analyses & Acceptance Criteria (ITAAC)**

During this period, SCE&G submitted 21 ITAAC Closure Notifications to the NRC. Of the 112 submitted ITAAC Closure Notifications to date, 70 have been verified complete and 42 are under review by the NRC. The ITAAC submittal rate continues to be an area of focus for the project.

## **G. Engineering**

### **1. Engineering Completion Status**

As of June 30, 2017, the Units 2 and 3 engineering completion (including NI, Balance of Plant (BOP), Site Specific, and Instrumentation and Controls) was 97.1% complete. Delivery of design documents for construction continues to be a focus area for SCE&G. In response to the WEC bankruptcy, SCE&G was evaluating the organizational structure and resources required to direct the engineering function for the project.

## **H. Training**

### **1. Initial Licensed Operator (ILO) Training**

During the period, an “operating exam only” was conducted by the NRC in May for two candidates. The NRC reported official results in June. Both candidates passed the exam.

ILO candidates in Class 3 continued simulator training and are scheduled to take an NRC exam in late 2017. Class 4 started the systems training phase and is currently scheduled to take an NRC exam in late 2018.

### **2. Maintenance and Technical (M&T) Staff Training**

In April 2017, the Unit 2/3 M&T training programs were granted initial accreditation from the National Nuclear Accrediting Board at the Institute of Nuclear Power Operations (INPO). This accreditation received covered all five phases of the systematic approach to training and was the first time that all five phases have been accredited during the initial accreditation review. The advantage of the full initial accreditation is accreditation renewal of these programs is not required for six years.

The M&T staff continued training in their respective disciplines including on-the-job training with mentoring and task performance evaluations.

## **I. Operational Readiness (OR)**

Schedule development and execution continue to be a priority for OR. Implementation of a Milestone process for schedule management and execution is in place. Focus areas are staff training; the issuance of programs and procedures needed for system turnover and plant operations; and alignment with WEC on items necessary to support design authority transfer.

### **1. Mission Critical Hiring**

SCE&G has filled 14 of the 20 mission-critical positions for 2017 and 22 of the 75 for the 2017 overall hiring goal. To date, 625 positions for all New Nuclear Deployment (NND) groups have been filled.

### **2. Initial Testing Program (ITP) Components**

SCE&G is evaluating the impact of the WEC bankruptcy on the ITP and its components and the structure and resources needed if SCE&G assumes the lead role in managing the ITP with WEC providing technical support.

## **J. Change Control/Owners' Cost Forecast**

During the period, no change orders were processed.

### **1. Escrow – Software & Documentation**

During the period, verification was ongoing to ensure that the required intellectual property and facility documentation is present in the escrow accounts in a usable form.

## **K. EPC Contract Payments under the Milestone Payment Schedule**

During the quarter, no milestone payments were made due to WEC's bankruptcy filing. Payments were made under the IAA to WEC and Fluor to continue work.

## **L. Transmission**

As of the close of the period, approximately 86% of the transmission structures and 80% of the wire miles comprising the transmission aspects of the project were complete. The transmission line construction to support Unit 2 is substantially complete.

### **1. The VCS2-St. George 230 kV Line No. 1 and the VCS2-St. George 230 kV Line No. 2**

Construction activities continued on the VCS2-St. George 230 kV Lines No. 1 and No. 2 segment between the Saluda rapids and Dunbar Road and between Gaston and Orangeburg. These activities included installation of construction access and erosion control measures, spotting and framing of poles, removal of the existing lines and

installation of pole foundations, poles and conductors.

## 2. Wateree-St. George-Williams 230 kV Line

During prior periods, construction was completed on the first approximately two-mile section of the project to rebuild the St. George to Summerville segment of the Wateree-St. George-Williams 230 kV Line. During the current period, construction was completed on a second 13 mile section of the project. Construction activities, including installation of erosion control measures and construction access, began on the final approximate 16 mile segment ending at the Summerville Substation in 2018. During the next period, construction activities will increase to include spotting and framing of poles and vibratory caissons and removal of existing lines and poles.

### III. Anticipated Construction Schedules

**Appendix 1** to this quarterly report lists and updates each of the milestones constituting the anticipated construction schedules for the Units pursuant to S.C. Code Ann. § 58-33-270(B)(1) and Order No. 2016-794.

### IV. Schedules of the Capital Costs Incurred Including Updates to the Information Required by S.C. Code Ann. § 58-33-270(B) (6) (the Inflation Indices)

The Capital Costs section of this report (Section IV.A) provides an update of the cumulative capital costs incurred as of June 30, 2017. These costs are compared to the cumulative capital cost targets approved by the Commission in Order No. 2016-794. In light of the decision to abandon the project, the approved capital cost targets have not been adjusted to reflect the currently reported historical escalation rates.

**Appendix 2** shows the Cumulative Project Cash Flow target as approved in Order No. 2016-794.

For comparison purposes, **Appendix 3** sets out the cash flow schedule for the project as it was approved in Order No. 2016-794. **Appendix 3** does not include any adjustments to the cash flow schedule for changes in inflation indices or adjustments in capital cost schedules made by the Company. The AFUDC forecast presented in **Appendix 3** is the AFUDC forecast that was current at the time of Order No. 2016-794.

#### A. Inflation Indices

**Appendix 4** shows the updated inflation indices approved in Order No. 2009-104(A). Included is a history of the annual Handy-Whitman All Steam Index, South Atlantic Region; the Handy-Whitman All Steam and Nuclear Index, South Atlantic Region; the Handy-Whitman All Transmission Plant Index, South Atlantic Region; and the Chained GDP Index for the past ten years.

## **V. Updated Schedule of Anticipated Capital Costs**

The schedule of anticipated capital costs associated with the abandonment of Units 2 and 3 is being evaluated.

## **VI. Conclusion**

In light of the decision which SCE&G made on July 31, 2017, to abandon the construction of Units 2 and 3 at the V.C. Summer Nuclear Station in Jenkinsville, S.C., the Company is working to safely and efficiently demobilize construction and to stabilize the site.

**ATTACHMENT 1****GLOSSARY OF ACRONYMS OR DEFINED TERMS**

<b>Acronym or Defined Term</b>	<b>Reference</b>
ACA	Affordable Care Act.
AECON	Aecon Industrial- a supplier of mechanical modules for the project.
AFUDC	Allowance for Funds Used During Construction.
Amendment	The October 2015 Amendment to the EPC Contract.
AP1000	The WEC designed Advanced Pressurized water nuclear reactor of approximately 1000 megawatts generating capacity.
APOG	A group of utilities who have submitted applications for AP1000 COLs.
ATV	Accreditation Team Visit- performed by the INPO to accredit training programs.
BLRA	The Base Load Review Act, S.C. Code Ann. § 58-33-210 et seq. (Supp. 2009).
BOP	Balance of Plant –areas outside of the nuclear island not classified as nuclear safety related.
CA	The designation for specific pre-fabricated structural modules that form part of the reactor building or auxiliary building, such as Module CA20.
CAP	Corrective Action Program.
CAP-I	Corrective Action Program Interface – between the owner’s and contractor’s quality assurance information systems.
CAR	Corrective Action Report – related to design, engineering or construction of the Units, or related processes, that must be corrected.
CAS	Commission (NRC) Approved Simulator –for the training of licensed system operators and modeling of plant responses to specified conditions.
CB&I	Chicago Bridge & Iron – a former member of the Consortium.
CB&I-LC	CB&I Lake Charles – the module fabrication unit located in Lake

<b>Acronym or Defined Term</b>	<b>Reference</b>
	Charles, Louisiana.
CB&I Services	A subsidiary of CB&I that is fabricating the containment vessels on site under contract with Westinghouse.
CDA	Critical Digital Assets –as identified for cyber security purposes.
CES	Carolina Energy Solutions – a subcontractor located in Rock Hill, South Carolina.
CGD	Commercial Grade Dedication – a quality assurance designation for certain materials and supplies used in nuclear construction.
CIP	Critical Infrastructure Protection – the goal of the cyber security program.
CMIS	Configuration Management Information System – the digital system which documents the configuration of the plant including its equipment, physical assets and computer systems.
CMMS	Computerized Maintenance Management System – the digital system which schedules and documents maintenance of the plant.
CMPS	Construction Milestone Payment Schedule –the schedule for making payments to WEC based on the accomplishment of defined construction milestone schedules
COLs	Combined Operating Licenses – licenses issued by the NRC for construction and operation of a nuclear unit.
COLA	A Combined Operating License Application.
Commission	The Public Service Commission of South Carolina.
Consortium	The joint venture between WEC and Stone & Webster to construct the Units under the terms of the EPC Contract. Stone & Webster is now known as WECTEC, a subsidiary of WEC.
CR	Condition Report – a report communicating and memorializing concerns with the design, engineering or construction of the Units, or related processes, which in some cases can become the basis for a Corrective Action Report.
CV	Containment Vessel – the structure which provides containment for the reactor vessel and associated equipment.



<b>Acronym or Defined Term</b>	<b>Reference</b>
CVBH	Containment Vessel Bottom Head – the structure that forms the bottom of the Containment Vessel.
CWIP	Construction Work in Progress – a concept of regulatory accounting.
CWP	Circulating Water Pipe –part of the Circulating Water System.
CWS	Circulating Water System –the system that will transport waste heat from the turbines to the cooling towers.
Cyber Security	Technologies, processes and practices designed to protect networks, computers, programs and data from attack, damage or unauthorized access.
DCD	Design Control Document – a document approved by the Nuclear Regulatory Commission which sets forth the approved design of a nuclear reactor.
Departures	Departures – minor deviations from the approved Design Control Document included in the licensing basis for the Units that do not rise to the level requiring a LAR.
DOR	Division of Responsibility.
DRB	Dispute Review Board – a three-person board established under the Amendment to hear commercial disputes under the EPC Contract.
ECoe	WEC’s Engineering Center of Excellence.
EMD	Electro-Mechanical Division of Curtiss-Wright Corp. – the supplier for the Reactor Coolant Pumps.
EPA	The United States Environmental Protection Agency.
EPC Contract	The Engineering, Procurement and Construction Agreement for construction of the Units as amended from time to time.
ER	Equipment Reliability.
EPS	Emergency Preparedness System
ERB	Emergency Response Building – the building which provides office space and housing for the emergency response personnel and equipment for all three units.
Exit Debriefing	A meeting held between the NRC and the licensee at the

<b>Acronym or Defined Term</b>	<b>Reference</b>
	conclusion of an NRC inspection to discuss the results of the inspection.
FAA	Functional Area Assessment – a work flow review to improve efficiency.
FAS	First Article Survey.
FERC	The Federal Energy Regulatory Commission.
Fixed/Firm	Prices under the EPC Contract which are either fixed or are firm but subject to defined escalation rates.
Fluor	The Fluor Corporation
GDP	Gross Domestic Product.
HFE/ISV	Human Factors Engineering/Integrated Systems Validation –part of the development of a training simulator for the Units.
HL or Hot Leg	That part of the Reactor Cooling Loop that transports steam to the steam generators.
HLD	Heavy Lift Derrick – the derrick that was erected on site to move large modules and equipment.
IAA	Interim Assessment Agreement dated March 28, 2017, as amended, among SCE&G, Santee Cooper, WEC and WECTEC
IBF	A subcontractor of Tioga that manufactures the Reactor Coolant Loop (RCL) piping.
I&C	Instrumentation and Control – systems for monitoring and controlling the reactor and other aspects of the plant.
ICN	ITAAC Closure Notification – the letter from a COL licensee to notify the NRC that an ITAAC is complete in accordance with 10 CFR 52.99(c)(1).
ICP	Integrated Construction Plan – the construction plan for the Units.
IFC	Issued for Construction – engineering drawings that include information necessary for construction of specific structures, systems and components.
ILO	Initial Licensed Operator – An individual licensed to operate a nuclear

<b>Acronym or Defined Term</b>	<b>Reference</b>
	reactor.
INPO	Institute of Nuclear Power Operations – an industry sponsored group that establishes standards, certifies training, and audits nuclear operations to ensure safe operations of nuclear units.
IPS	Integrated Project Schedule – the schedule for licensing and construction of the Units.
ISV	Integrated Systems Validation – part of the NRC process for ensuring that I&C systems support nuclear safety compliance.
ITAAC	Inspections, Tests, Analyses, and Acceptance Criteria – the inspections, tests, analyses and acceptance criteria that the NRC has determined to be necessary and sufficient to demonstrate that a nuclear unit has been constructed and will operate in conformity with the COLs, the Atomic Energy Act of 1954, as amended, and the NRC’s regulations.
ITP	Initial Testing Program – NRC mandated testing for individual systems and for each Unit to certify that they will perform as licensed.
LAR	License Amendment Request – a formal request made by VCSNS to amend the combined operating license, its appendices, or its associated bases.
LNTP	Limited Notice to Proceed – a notice which authorize a vendor to commence specific work.
LOTO	Lock-Out, Tag-Out – the safety-related process for ensuring equipment is not energized or put in motion while maintenance or inspection is taking place.
LSA	Limited Scope Audit – an audit of QA programs.
LSS	Limited Scope Simulator –a training simulator with limited functionality that can be used for the initial stages of operator training.
M&T	Maintenance and Technical – a designation for personnel who require training and certification in nuclear safety matters but are not ILOs or SLO.
MAB	Module Assembly Building – a building on the construction site where large modules will be constructed and equipment will be

<b>Acronym or Defined Term</b>	<b>Reference</b>
	prepared for installation in a space that is protected from the elements.
Mangiarotti	Mangiarotti Nuclear, S.p.A. – major equipment vendor to the project.
MEL	Master Equipment List – a list that identifies the attributes for assets which are permanent plant equipment used in the plant.
MTS	Maintenance Training Skid – an equipment skid used for training purposes.
NCV	Non-Cited Violations –issues identified and pointed out in NRC inspections which do not rise to a level requiring citation and documentation as violations.
NDE	Non-Destructive Examination.
NEI	Nuclear Energy Institute – a nuclear industry trade association.
NI	Nuclear Island – the structures comprising the steel Containment Vessel, the Reactor Building, and the Auxiliary Building.
NLC	Nuclear Learning Center - a training facility operated by SCE&G at the Jenkinsville site.
NLO	Non-Licensed Operator –an operator who may support ILOs and SLOs and work under their supervisions.
NNAB	National Nuclear Accrediting Board.
NND	New Nuclear Deployment Team – the team within SCE&G that is directly responsible for the project.
NNI	Newport News Industrial – a module fabrication subcontractor to WEC.
NON	Notice of Non-conformance – a finding that quality and design requirements are not met.
NPDES	National Pollutant Discharge Elimination System – the Federal water quality protection system.
NRC	The United States Nuclear Regulatory Commission.
NUPIC	Nuclear Procurement Issues Committee--an international association of nuclear utilities that conducts independent audits of companies

<b>Acronym or Defined Term</b>	<b>Reference</b>
	involved in the nuclear supply chain.
OR	Operational Readiness
ORS	South Carolina Office of Regulatory Staff.
OWS	Offsite Water System – the system that withdraws water from Monticello Reservoir and provides potable and filtered water for the Units.
PAR	Preliminary Amendment Request – a formal request made by a COL licensee to proceed at its own risk with work consistent with a LAR prior to approval of that LAR.
PCCWST	Passive Containment Cooling Water Storage Tank
PDC	Power Distribution Center - prefabricated, modular enclosures housing electrical equipment such as switchgear, motor control center equipment and other auxiliary equipment.
Pike	Pike Energy Solutions, a contractor for transmission and switchyard related work.
PM	Preventative Maintenance.
PMO	Project Management Organization – the WEC organization overseeing construction of the Units.
PMP	Probable Maximum Precipitation – the standard for assessing the adequacy and performance of site storm water drainage systems.
PO	Purchase Order.
PRA	Probabilistic Risk Assessment – an assessment of safety-related risks and their probabilities of occurring.
PRHR	Passive Residual Heat Removal Heat Exchanger –a heat exchange unit that provides cooling to the AP1000 reactor during emergency situations as a part of the passive safety system which.
PRS	Plant Reference Simulator – a training simulator with full functionality that can be used in all stages of operator training and in operating the Units.
PVS	Paxton & Vierling Steel - the vendor providing safety related steel and structural steel modules.

<b>Acronym or Defined Term</b>	<b>Reference</b>
PwC	Price Waterhouse Coopers, LLP and its subsidiary companies that provide accounting and consulting services.
PWS	The Potable Water System – the system which provides potable water to the site.
QA	Quality Assurance – the planned and systematic activities implemented in a quality system so that the quality requirements for a product or service will be fulfilled.
QAP	Quality Assurance Program – the program for ensuring effective Quality Assurance is achieved.
QA/QC	Quality Assurance/Quality Control.
QC	Quality Control – the observations, techniques and activities used to fulfill requirements for quality.
QMS	Quality Management System – the system for ensuring QA/QC.
QS	Quality Systems – equivalent to QMS.
RAI	Requests for Additional Information – information requests issued by the NRC staff or other regulators to licensees and others.
RCA	Root Cause Analysis – the identification and evaluation of the reason for non- conformance, an undesirable condition, or a problem which (when solved) restores the status quo.
RC/SC	Reinforced Concrete to Steel Component.
RCL	The Reactor Coolant Loop – the piping and related equipment that transports heat from the reactor to the steam generator.
RCP	The Reactor Coolant Pump – pumps which forms part of the Reactor Coolant System.
RCS	The Reactor Coolant System – the complete system for transferring and transporting heat from the reactor to the steam generator.
RFI	Requests for Information – information requests issued by the NRC staff to licensees.
ROE	Return on Equity.
ROW	Right-of-way.

<b>Acronym or Defined Term</b>	<b>Reference</b>
RT	Radiographic Testing – a nondestructive testing method of inspecting materials for hidden flaws by using the ability of short wavelength electromagnetic radiation (high energy photons) to penetrate various materials.
RV	Reactor Vessel – the metal vessel which contains the nuclear reactor and related controls.
RWS	Raw Water System – the system for withdrawing and transporting raw water from the Monticello Reservoir.
SAT	Site Acceptance Testing –testing to ensure that systems and the Units conform to design parameters.
SCDHEC	The South Carolina Department of Health and Environmental Control.
SCDNR	The South Carolina Department of Natural Resources.
SCE&G or the Company	South Carolina Electric & Gas Company.
SDS	Simulator Development System.
SER	Safety Evaluation Report – a report generated by the NRC as a precondition to licensing or amending a license.
SES	Plant Security Systems – the systems for ensuring physical security of the site.
SNC	Southern Nuclear Company – a subsidiary of Southern Company and licensed operator of the Vogtle Nuclear Units and two other nuclear plants.
SPX	SPX-Copes Vulcan– the supplier of Squib Valves for the project.
SRO	Senior Reactor Operator – a reactor operator licensed to train and supervise other reactor operators.
SROC	Senior Reactor Operator Certification – certification as a SRO.
Target	Costs under the EPC Contract where targets have been established but where SCE&G pays actual costs as incurred.
TSU	Technical Specification Upgrade.
Units	V. C. Summer Nuclear Station Units 2 & 3.

<b>Acronym or Defined Term</b>	<b>Reference</b>
Update Docket	A proceeding under the BLRA seeking Commission approval of updated cost and construction schedules for the Units.
UPS	Uninterruptible Power Supply –back up power systems.
URI	Unresolved Items – A term used by the NRC during inspections for items that require further action.
USACOE	The United States Army Corps of Engineers.
VCSNS or VCSN	V. C. Summer Nuclear Station.
WEC or Westinghouse	Westinghouse Electric Company, LLC.
WECTEC	A subsidiary of WEC principally established to house engineering and supervisory personnel transitioning from CB&I.
WMS	Work Management System –the system for assigning work duties and tasks in nuclear testing and operations.
WTP	Water Treatment Plant – the off-site which will take water from Lake Monticello and treat it to potable water standards.
WWS	Waste Water System – the system for collection, treatment and disposal of domestic waste water generated on site.



## VII. APPENDIX 1

### V. C. Summer Nuclear Station Units 2 & 3

#### **Quarterly Report to the South Carolina Office of Regulatory Staff Submitted by South Carolina Electric & Gas Company Pursuant to Public Service Commission Order No. 2009-104(A)**



#### **Quarter Ending June 30, 2017**

**Appendix 1** list and update each of the milestones which the Commission adopted as the Approved Construction Schedule for the Units, pursuant to S.C. Code Ann. § 58-33- 270(B)(1) in Order No. 2016-794. Consistent with that Order, Appendix 1 also reports on the milestones which were approved in Order No. 2015-661 but which were not carried forward as operative milestones for BLRA monitoring purposes. Appendix 1 provides columns with the following information:

1. Milestone tracking ID number.
2. The description of the milestone as established in Order No. 2015-661.
3. The BLRA milestone date as approved by the Commission in Order No. 2015-661 or Order No. 2016-794, as applicable.
4. The currently projected milestone completion date.
5. For each completed milestone, the date by which it was completed. For milestones completed prior to the current reporting quarter, the milestone entry is shaded in gray.
6. Information as to whether any milestone adopted under Order No. 2016-794 has been shifted outside of the +18/-24 Month Contingency approved by the Commission.
7. Notes.



**Appendix 1**  
**VC Summer Units 2 and 3**

Tracking ID	Order No. 2016-794 Description	Order No. 2016-794	17-2Q Targeted Milestone Completion Date	Actual Completion Date	Delta Months from Order No. 2016-794 Date	Outside +18/-24 Months Contingency?	Notes
1	Approve Engineering Procurement and Construction Agreement	Complete		5/23/2008			
2	Issue POs to nuclear component fabricators for Units 2 & 3 Containment Vessels	Complete		12/3/2008			
3	Contractor Issue PO to Passive Residual Heat Removal Heat Exchanger Fabricator - First Payment - Unit 2	Complete		8/18/2008			
4	Contractor Issue PO to Accumulator Tank Fabricator - Unit 2	Complete		7/31/2008			
5	Contractor Issue PO to Core Makeup Tank Fabricator - Units 2 & 3	Complete		9/30/2008			
6	Contractor Issue PO to Squib Valve Fabricator - Units 2 & 3	Complete		3/31/2009			
7	Contractor Issue PO to Steam Generator Fabricator - Units 2 & 3	Complete		5/29/2008			
8	Contractor Issue Long Lead Material PO to Reactor Coolant Pump Fabricator - Units 2 & 3	Complete		6/30/2008			
9	Contractor Issue PO to Pressurizer Fabricator - Units 2 & 3	Complete		8/18/2008			
10	Contractor Issue PO to Reactor Coolant Loop Pipe Fabricator - First Payment - Units 2 & 3	Complete		6/20/2008			
11	Reactor Vessel Internals - Issue Long Lead Material PO to Fabricator - Units 2 & 3	Complete		11/21/2008			
12	Contractor Issue Long Lead Material PO to Reactor Vessel Fabricator - Units 2 & 3	Complete		5/29/2008			
13	Contractor Issue PO to Integrated Head Package Fabricator - Units 2 & 3	Complete		7/31/2009			
14	Control Rod Drive Mechanism Issue PO for Long Lead Material to Fabricator - Units 2 & 3 - first payment	Complete		6/21/2008			
15	Issue POs to nuclear component fabricators for Nuclear Island structural CA20 Modules	Complete		8/28/2009			
16	Start Site Specific and balance of plant detailed design	Complete		9/11/2007			
17	Instrumentation & Control Simulator - Contractor Place Notice to Proceed - Units 2 & 3	Complete		10/31/2008			
18	Steam Generator - Issue Final PO to Fabricator for Units 2 & 3	Complete		6/30/2008			
19	Reactor Vessel Internals - Contractor Issue PO for Long Lead Material (Heavy Plate and Heavy Forgings) to Fabricator - Units 2&3	Complete		1/29/2010			

Legend  = Completed  = Completed this Quarter



**Appendix 1**  
**VC Summer Units 2 and 3**

Tracking ID	Order No. 2016-794 Description	Order No. 2016-794	17-2Q Targeted Milestone Completion Date	Actual Completion Date	Delta Months from Order No. 2016-794 Date	Outside +18/-24 Months Contingency?	Notes
20	Contractor Issue Final PO to Reactor Vessel Fabricator - Units 2&3	Complete		9/30/2008			
21	Variable Frequency Drive Fabricator Issue Transformer PO - Units 2&3	Complete		4/30/2009			
22	Start clearing, grubbing and grading	Complete		1/26/2009			
23	Core Makeup Tank Fabricator Issue Long Lead Material PO - Units 2 & 3	Complete		10/31/2008			
24	Accumulator Tank Fabricator Issue Long Lead Material PO - Units 2&3	Complete		10/31/2008			
25	Pressurizer Fabricator Issue Long Lead Material PO - Units 2 & 3	Complete		10/31/2008			
26	Reactor Coolant Loop Pipe - Contractor Issue PO to Fabricator - Second Payment - Units 2 & 3	Complete		4/30/2009			
27	Integrated Head Package - Issue PO to Fabricator - Units 2 and 3 - second payment	Complete		7/31/2009			
28	Control Rod Drive Mechanisms - Contractor Issue PO for Long Lead Material to Fabricator - Units 2 & 3	Complete		6/30/2008			
29	Contractor Issue PO to Passive Residual Heat Removal Heat Exchanger Fabricator - Second Payment - Units 2 & 3	Complete		10/31/2008			
30	Start Parr Road intersection work	Complete		2/13/2009			
31	Reactor Coolant Pump - Issue Final PO to Fabricator - Units 2 & 3	Complete		6/30/2008			
32	Integrated Heat Packages Fabricator Issue Long Lead Material PO - Units 2 & 3	Complete		10/1/2009			
33	Design Finalization Payment 3	Complete		1/30/2009			
34	Start site development	Complete		6/23/2008			
35	Contractor Issue PO to Turbine Generator Fabricator - Units 2 & 3	Complete		2/19/2009			
36	Contractor Issue PO to Main Transformers Fabricator - Units 2 & 3	Complete		9/25/2009			
37	Core Makeup Tank Fabricator Notice to Contractor Receipt of Long Lead Material - Units 2 & 3	Complete		12/30/2010			
38	Design Finalization Payment 4	Complete		4/30/2009			
39	Turbine Generator Fabricator Issue PO for Condenser Material - Unit 2	Complete		8/28/2009			

Legend  = Completed  = Completed this Quarter

**Appendix 1**  
**VC Summer Units 2 and 3**

Tracking ID	Order No. 2016-794 Description	Order No. 2016-794	17-2Q Targeted Milestone Completion Date	Actual Completion Date	Delta Months from Order No. 2016-794 Date	Outside +18/-24 Months Contingency?	Notes
40	Reactor Coolant Pump Fabricator Issue Long Lead Material Lot 2 - Units 2 & 3	Complete		4/30/2009			
41	Passive Residual Heat Removal Heat Exchanger Fabricator Receipt of Long Lead Material - Units 2 & 3	Complete		5/27/2010			
42	Design Finalization Payment 5	Complete		7/31/2009			
43	Start erection of construction buildings, to include craft facilities for personnel, tools, equipment; first aid facilities; field offices for site management and support personnel; temporary warehouses; and construction hiring office	Complete		12/18/2009			
44	Reactor Vessel Fabricator Notice to Contractor of Receipt of Flange Nozzle Shell Forging - Unit 2	Complete		8/28/2009			
45	Design Finalization Payment 6	Complete		10/7/2009			
46	Instrumentation and Control Simulator - Contractor Issue PO to Subcontractor for Radiation Monitor System - Units 2 & 3	Complete		12/17/2009			
47	Reactor Vessel Internals - Fabricator Start Fit and Welding of Core Shroud Assembly - Unit 2	Complete		7/29/2011			
48	Turbine Generator Fabricator Issue PO for Moisture Separator Reheater/Feedwater Heater Material - Unit 2	Complete		4/30/2010			
49	Reactor Coolant Loop Pipe Fabricator Acceptance of Raw Material - Unit 2	Complete		2/18/2010			
50	Reactor Vessel Internals - Fabricator Start Weld Neutron Shield Spacer Pads to Assembly - Unit 2	Complete		8/28/2012			
51	Control Rod Drive Mechanisms - Fabricator to Start Procurement of Long Lead Material - Unit 2	Complete		6/30/2009			
52	Contractor Notified that Pressurizer Fabricator Performed Cladding on Bottom Head - Unit 2	Complete		12/23/2010			
53	Start excavation and foundation work for the standard plant for Unit 2	Complete		3/15/2010			
54	Steam Generator Fabricator Notice to Contractor of Receipt of 2nd Steam Generator Tubesheet Forging - Unit 2	Complete		4/30/2010			
55	Reactor Vessel Fabricator Notice to Contractor of Outlet Nozzle Welding to Flange Nozzle Shell Completion - Unit 2	Complete		12/30/2010			

Legend  = Completed  = Completed this Quarter



**Appendix 1**  
**VC Summer Units 2 and 3**

Tracking ID	Order No. 2016-794 Description	Order No. 2016-794	17-2Q Targeted Milestone Completion Date	Actual Completion Date	Delta Months from Order No. 2016-794 Date	Outside +18/-24 Months Contingency?	Notes
56	Turbine Generator Fabricator Notice to Contractor Condenser Fabrication Started - Unit 2	Complete		5/17/2010			
57	Complete preparations for receiving the first module on site for Unit 2	Complete		1/22/2010			
58	Steam Generator Fabricator Notice to Contractor of Receipt of 1st Steam Generator Transition Cone Forging - Unit 2	Complete		4/21/2010			
59	Reactor Coolant Pump Fabricator Notice to Contractor of Manufacturing of Casing Completion - Unit 2	Complete		11/16/2010			
60	Reactor Coolant Loop Pipe Fabricator Notice to Contractor of Machining, Heat Treating & Non-Destructive Testing Completion - Unit 2	Complete		3/20/2012			
61	Core Makeup Tank Fabricator Notice to Contractor of Satisfactory Completion of Hydrotest - Unit 2	Complete		11/26/2012			
62	Polar Crane Fabricator Issue PO for Main Hoist Drum and Wire Rope - Units 2 & 3	Complete		2/1/2011			
63	Control Rod Drive Mechanisms - Fabricator to Start Procurement of Long Lead Material - Unit 3	Complete		6/14/2011			
64	Turbine Generator Fabricator Notice to Contractor Condenser Ready to Ship - Unit 2	Complete		3/26/2012			
65	Start placement of mud mat for Unit 2	Complete		7/20/2012			
66	Steam Generator Fabricator Notice to Contractor of Receipt of 1st Steam Generator Tubing - Unit 2	Complete		9/28/2010			
67	Pressurizer Fabricator Notice to Contractor of Welding of Upper and Intermediate Shells Completion - Unit 2	Complete		10/28/2011			
68	Reactor Vessel Fabricator Notice to Contractor of Closure Head Cladding Completion - Unit 3	Complete		6/28/2012			
69	Begin Unit 2 first nuclear concrete placement	Complete		3/9/2013			
70	Reactor Coolant Pump Fabricator Notice to Contractor of Stator Core Completion - Unit 2	Complete		12/1/2011			
71	Fabricator Start Fit and Welding of Core Shroud Assembly - Unit 2	Complete		7/29/2011			
72	Steam Generator Fabricator Notice to Contractor of Completion of 1st Steam Generator Tubing Installation - Unit 2	Complete		1/27/2012			

Legend  = Completed  = Completed this Quarter



**Appendix 1**  
**VC Summer Units 2 and 3**

Tracking ID	Order No. 2016-794 Description	Order No. 2016-794	17-2Q Targeted Milestone Completion Date	Actual Completion Date	Delta Months from Order No. 2016-794 Date	Outside +18/-24 Months Contingency?	Notes
73	Reactor Coolant Loop Pipe-Shipment of Equipment to Site - Unit 2	Complete		12/19/2013			
74	Control Rod Drive Mechanism - Ship Remainder of Equipment (Latch Assembly & Rod Travel Housing) to Head Supplier - Unit 2	Complete		7/16/2012			
75	Pressurizer Fabricator Notice to Contractor of Welding of Lower Shell to Bottom Head Completion - Unit 2	Complete		12/22/2011			
76	Steam Generator Fabricator Notice to Contractor of Completion of 2nd Steam Generator Tubing Installation - Unit 2	Complete		5/4/2012			
77	Design Finalization Payment 14	Complete		10/31/2011			
78	Set module CA04 for Unit 2	Complete		5/3/2014			
79	Passive Residual Heat Removal Heat Exchanger Fabricator Notice to Contractor of Final Post Weld Heat Treatment - Unit 2	Complete		5/24/2011			
80	Passive Residual Heat Removal Heat Exchanger Fabricator Notice to Contractor of Completion of Tubing - Unit 2	Complete		5/29/2012			
81	Polar Crane Fabricator Notice to Contractor of Girder Fabrication Completion - Unit 2	Complete		10/23/2012			
82	Turbine Generator Fabricator Notice to Contractor Condenser Ready to Ship - Unit 3	Complete		8/26/2013			
83	Set Containment Vessel ring #1 for Unit 2	Complete		6/3/2014			
84	Reactor Coolant Pump Fabricator Delivery of Casings to Port of Export - Unit 2	Complete		7/6/2013			
85	Reactor Coolant Pump Fabricator Notice to Contractor of Stator Core Completion - Unit 3	Complete		7/18/2013			
86	Reactor Vessel Fabricator Notice to Contractor of Receipt of Core Shell Forging - Unit 3	Complete		3/29/2012			
87	Contractor Notified that Pressurizer Fabricator Performed Cladding on Bottom Head - Unit 3	Complete		11/9/2011			
88	Set Nuclear Island structural module CA03 for Unit 2	Complete		7/22/2016			
89	Squib Valve Fabricator Notice to Contractor of Completion of Assembly and Test for Squib Valve Hardware - Unit 2	Complete		5/10/2012			
90	Accumulator Tank Fabricator Notice to Contractor of Satisfactory Completion of Hydrotest - Unit 3	Complete		9/16/2013			

Legend  = Completed  = Completed this Quarter



**Appendix 1**  
**VC Summer Units 2 and 3**

Tracking ID	Order No. 2016-794 Description	Order No. 2016-794	17-2Q Targeted Milestone Completion Date	Actual Completion Date	Delta Months from Order No. 2016-794 Date	Outside +18/-24 Months Contingency?	Notes
91	Polar Crane Fabricator Notice to Contractor of Electric Panel Assembly Completion - Unit 2	Complete		3/6/2013			
92	Start containment large bore pipe supports for Unit 2	Complete		11/13/2014			
93	Integrated Head Package - Shipment of Equipment to Site - Unit 2	Complete		5/9/2014			
94	Reactor Coolant Pump Fabricator Notice to Contractor of Final Stator Assembly Completion - Unit 2	Complete		12/17/2013			
95	Steam Generator Fabricator Notice to Contractor of Completion of 2nd Steam Generator Tubing Installation - Unit 3	Complete		2/7/2014			
96	Steam Generator Fabricator Notice to Contractor of Satisfactory Completion of 1st Steam Generator Hydrotest - Unit 2	Complete		1/14/2013			
97	Start concrete fill of Nuclear Island structural modules CA01 and CA02 for Unit 2	12/10/2016	11/30/2017				
98	Passive Residual Heat Removal Heat Exchanger - Delivery of Equipment to Port of Entry - Unit 2	Complete		4/25/2014			
99	Refueling Machine Fabricator Notice to Contractor of Satisfactory Completion of Factory Acceptance Test - Unit 2	Complete		1/8/2015			
100	Deliver Reactor Vessel Internals to Port of Export - Unit 2	Complete		1/29/2016			
101	Set Unit 2 Containment Vessel #3	Complete		6/9/2017			
102	Steam Generator - Contractor Acceptance of Equipment at Port of Entry - Unit 2	Complete		1/16/2015			
103	Turbine Generator Fabricator Notice to Contractor Turbine Generator Ready to Ship - Unit 2	Complete		5/28/2013			
104	Pressurizer Fabricator Notice to Contractor of Satisfactory Completion of Hydrotest - Unit 3	Complete		3/28/2015			
105	Polar Crane - Shipment of Equipment to Site - Unit 2	Complete		3/22/2017			
106	Receive Unit 2 Reactor Vessel on site from fabricator	Complete		7/31/2013			
107	Set Unit 2 Reactor Vessel	Complete		8/30/2016			
108	Steam Generator Fabricator Notice to Contractor of Completion of 2nd Channel Head to Tubesheet Assembly Welding - Unit 3	Complete		4/24/2015			
109	Reactor Coolant Pump Fabricator Notice to Contractor of Final Stator Assembly Completion - Unit 3	Complete		8/30/2016			

Legend  = Completed  = Completed this Quarter

**Appendix 1**  
**VC Summer Units 2 and 3**



Tracking ID	Order No. 2016-794 Description	Order No. 2016-794	17-2Q Targeted Milestone Completion Date	Actual Completion Date	Delta Months from Order No. 2016-794 Date	Outside +18/-24 Months Contingency?	Notes
110	Reactor Coolant Pump - Shipment of Equipment to Site (2 Reactor Coolant Pumps) - Unit 2	Complete		2/23/2017			
111	Place first nuclear concrete for Unit 3	Complete		11/2/2013			
112	Set Unit 2 Steam Generator	Complete		1/12/2017			
113	Main Transformers Ready to Ship - Unit 2	Complete		7/31/2013			
114	Complete Unit 3 Steam Generator Hydrotest at fabricator	Complete		8/21/2015			
115	Set Unit 2 Containment Vessel Bottom Head on basemat legs	Complete		5/22/2013			
116	Set Unit 2 Pressurizer Vessel	5/11/2017	7/26/2017				
117	Reactor Coolant Pump Fabricator Notice to Contractor of Satisfactory Completion of Factory Acceptance Test - Unit 3	7/1/2017	9/15/2017				
118	Deliver Reactor Vessel Internals to Port of Export - Unit 3	8/11/2017	7/5/2017				
119	Main Transformers Fabricator Issue PO for Material - Unit 3	Complete		1/15/2015			
120	Complete welding of Unit 2 Passive Residual Heat Removal System piping	5/19/2017	9/30/2017				
121	Steam Generator - Contractor Acceptance of Equipment at Port of Entry - Unit 3	Complete		3/16/2017			
122	Refueling Machine - Shipment of Equipment to Site - Unit 3	5/15/2017	8/16/2017				
123	Set Unit 2 Polar Crane	6/28/2017	6/25/2018				
124	Reactor Coolant Pumps - Shipment of Equipment to Site - Unit 3	9/1/2017	9/22/2017				
125	Main Transformers Ready to Ship - Unit 3	Complete		7/29/2015			
126	Spent Fuel Storage Rack - Shipment of Last Rack Module - Unit 3	Complete		9/3/2015			
127	Start electrical cable pulling in Unit 2 Auxiliary Building	10/6/2016	9/27/2017				
128	Complete Unit 2 Reactor Coolant System cold hydro	8/16/2018	3/18/2019				
129	Activate class 1E DC power in Unit 2 Auxiliary Building	11/1/2017	6/23/2018				
130	Complete Unit 2 hot functional test	11/17/2018	6/19/2019				
131	Install Unit 3 ring 3 for containment vessel	11/29/2017	7/13/2018				
132	Load Unit 2 nuclear fuel	5/10/2019	10/29/2019				
133	Unit 2 Substantial Completion	8/31/2019	4/2020		+8 Months	No	
134	Set Unit 3 Reactor Vessel	12/14/2017	11/22/2017				
135	Set Unit 3 Steam Generator #2	2/21/2018	5/5/2018				
136	Set Unit 3 Pressurizer Vessel	3/30/2018	6/12/2018				
137	Complete welding of Unit 3 Passive Residual Heat Removal System piping	4/11/2018	5/4/2018				

Legend  = Completed  = Completed this Quarter



**Appendix 1**  
**VC Summer Units 2 and 3**

Tracking ID	Order No. 2016-794 Description	Order No. 2016-794	17-2Q Targeted Milestone Completion Date	Actual Completion Date	Delta Months from Order No. 2016-794 Date	Outside +18/-24 Months Contingency?	Notes
138	Set Unit 3 polar crane	5/24/2018	9/11/2018				
139	Start Unit 3 Shield Building roof slab rebar placement	7/7/2019	11/20/2019				
140	Start Unit 3 Auxiliary Building electrical cable pulling	5/18/2017	10/20/2017				
141	Activate Unit 3 Auxiliary Building class 1E DC power	9/21/2018	12/10/2018				
142	Complete Unit 3 Reactor Coolant System cold hydro	8/15/2019	9/14/2019				
143	Complete Unit 3 hot functional test	11/11/2019	12/10/2019				
144	Complete Unit 3 nuclear fuel load	3/11/2020	5/19/2020				
145	Begin Unit 3 full power operation	7/12/2020	10/7/2020				
146	Unit 3 Substantial Completion	8/31/2020	12/2020		+4 Months	No	

Legend  = Completed  = Completed this Quarter

**VIII. APPENDIX 2**

**V. C. Summer Nuclear Station Units 2 & 3**

**Quarterly Report to the South Carolina Office of Regulatory Staff  
Submitted by South Carolina Electric & Gas Company  
Pursuant to Public Service Commission Order No. 2009-104(A)**

**Quarter Ending June 30, 2017**

**Appendix 2** is an updated and expanded version of the information contained in the capital cost schedule approved by the Commission in Order No. 2016-794.

**Appendix 2** shows the actual expenditures on the project by plant cost category through the current period.

## Appendix 2

**RESTATED and UPDATED CONSTRUCTION EXPENDITURES**

(Thousands of \$)

**V.C. Summer Units 2 and 3 - Summary of SCE&G Capital Cost Components**

<b>Per Order 2016-794 Adjusted</b>	<b>Total</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Annual Project Cash Flow(per order)	7,336,888	21,723	100,905	340,003	398,551	349,061	562,946	537,569	511,965	656,378	952,397	1,335,245	965,395	463,740	141,010
Capital Cost Rescheduling Contingency	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Budget Carry-Forward Adjustment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net	7,336,888	21,723	100,905	340,003	398,551	349,061	562,946	537,569	511,965	656,378	952,397	1,335,245	965,395	463,740	141,010
Adjusted for Change in Escalation	7,326,855	21,723	100,905	340,003	398,551	349,061	562,946	537,569	511,965	656,378	955,124	1,329,184	960,987	462,189	140,270
Cumulative Project Cash Flow(Target)		21,723	122,629	462,632	861,183	1,210,244	1,773,190	2,310,759	2,822,724	3,479,101	4,434,225	5,763,409	6,724,396	7,186,585	7,326,855
<b>Actual through June 2017*</b>															
<b>Plant Cost Categories</b>	<b>Total</b>	<b>Actual</b>													
Fixed with No Adjustment	1,720,409	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017			
Firm with Fixed Adjustment A	266,750	4,628	35,199	22,066	67,394	50,551	66,057	22,960	11,634	366,348	727,099	346,474			
Firm with Fixed Adjustment B	238,868	-	-	63,250	27,500	24,200	75,075	42,900	7,700	26,125	-	-			
Firm with Indexed Adjustment	873,741	-	5,499	35,768	49,513	39,371	45,043	31,048	22,834	9,791	-	-			
Actual Craft Wages	133,306	-	45,869	148,713	115,172	137,871	118,769	150,530	129,994	26,822	0	-			
Non-Labor Costs	406,936	-	312	1,937	9,779	11,682	21,091	25,217	38,785	24,503	0	-			
Time & Materials	15,787	-	1,271	31,255	79,778	9,298	65,227	70,154	105,390	44,564	(0)	-			
Owners Costs	408,748	-	1,013	155	1,004	764	1,878	2,300	4,055	2,048	2,461	109			
Transmission Costs	253,191	17,096	8,198	15,206	23,743	29,276	43,643	47,245	51,807	56,885	73,152	42,498			
		-	26	724	927	11,964	51,677	56,593	46,439	44,401	31,412	9,028			
Total Base Project Costs(2007 \$)	4,317,736	21,723	97,386	319,073	374,810	314,977	488,461	448,947	418,639	601,486	834,124	398,109			
Total Project Escalation	418,968	-	3,519	20,930	23,741	34,084	74,485	88,622	93,326	54,891	18,156	7,213			
<b>Total Revised Project Cash Flow</b>	<b>4,736,704</b>	<b>21,723</b>	<b>100,905</b>	<b>340,003</b>	<b>398,551</b>	<b>349,061</b>	<b>562,946</b>	<b>537,569</b>	<b>511,965</b>	<b>656,378</b>	<b>852,280</b>	<b>405,322</b>			
Cumulative Project Cash Flow(Revised)		21,723	122,629	462,632	861,183	1,210,244	1,773,190	2,310,759	2,822,724	3,479,101	4,331,382	4,736,704			
AFUDC(Capitalized Interest)	192,616	645	3,497	10,564	17,150	14,218	18,941	27,722	26,131	22,202	30,817	20,729			
Gross Construction	4,929,320	22,368	104,403	350,567	415,701	363,278	581,886	565,291	538,096	678,580	883,097	426,052			
Construction Work in Progress		22,368	126,771	477,338	893,039	1,256,317	1,838,203	2,403,495	2,941,590	3,620,170	4,503,268	4,929,320			

\*Applicable index escalation rates for 2017 are estimated. Escalation is subject to restatement when actual indices for 2017 are final.

**Notes:**

2017-2020 AFUDC rate applied

6.06%

The AFUDC rate applied is the current forecasted SCE&G rate. AFUDC rates can vary with changes in market interest rates, SCE&G's embedded cost of capital, capitalization ratios, construction work in process, and SCE&G's short-term debt outstanding.

Spending through June 30, 2017, reflects actual amounts. Spending beyond June 30, 2017, is subject to on-going evaluation in light of the decision to abandon the Units. In addition, the approved capital cost targets have not been adjusted to reflect the currently reported historical escalation rates

## **IX. APPENDIX 3**

### **V. C. Summer Nuclear Station Units 2 & 3**

**Quarterly Report to the South Carolina Office of Regulatory  
Staff Submitted by South Carolina Electric & Gas Company  
Pursuant to Public Service Commission Order No. 2009-104(A)**

**Quarter Ending June 30, 2017**

For comparison purposes, **Appendix 3** provides the schedule of capital costs for the project which was approved by the Commission in Order No. 2016-794 as the Approved Capital Cost of the Units, pursuant to S.C. Code Ann. § 58-33-270(B)(2). **Appendix 3** also reflects the forecast of AFUDC expense based on these adjusted schedules and the AFUDC rates that were current at the time of Order No. 2016-794. **Appendix 3** is intended to provide a fixed point of reference for future revisions and updating. While the schedule of costs contained on **Appendix 3** is subject to revision for escalation, changes in AFUDC rates and amounts, capital cost scheduling contingencies and other contingency adjustments as authorized in Order No. 2009-104(A), no such adjustments have been made to the schedules presented here.

# Appendix 3

## RESTATED and UPDATED CONSTRUCTION EXPENDITURES

(Thousands of \$)

### V.C. Summer Units 2 and 3 - Summary of SCE&G Capital Cost Components

Per Order 2016-794

	Total	Actual									Projected				
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Plant Cost Categories</b>															
Fixed with No Adjustment	3,657,459	4,628	35,199	22,066	67,394	50,551	66,057	22,960	11,634	366,348	753,742	1,110,388	756,960	325,881	63,652
Firm with Fixed Adjustment A	266,750	-	-	63,250	27,500	24,200	75,075	42,900	7,700	26,125	-	-	-	-	-
Firm with Fixed Adjustment B	238,868	-	5,499	35,768	49,513	39,371	45,043	31,048	22,834	9,791	-	-	-	-	-
Firm with Indexed Adjustment	873,741	-	45,869	148,713	115,172	137,871	118,769	150,530	129,994	26,822	0	-	-	-	-
Actual Craft Wages	133,306	-	312	1,937	9,779	11,682	21,091	25,217	38,785	24,503	0	-	-	-	-
Non-Labor Costs	406,936	-	1,271	31,255	79,778	9,298	65,227	70,154	105,390	44,564	(0)	-	-	-	-
Time & Materials	60,816	-	1,013	155	1,004	764	1,878	2,300	4,055	2,048	6,761	9,413	24,329	6,686	410
Owners Costs	837,363	17,096	8,198	15,206	23,743	29,276	43,643	47,245	51,807	56,885	113,992	133,978	127,821	106,102	62,372
Transmission Costs	329,512	-	26	724	927	11,964	51,677	56,593	46,439	44,401	56,471	47,360	12,930	-	-
<b>Total Base Project Costs(2007 \$)</b>	6,804,751	21,723	97,386	319,073	374,810	314,977	488,461	448,947	418,639	601,486	930,966	1,301,139	922,040	438,669	126,434
<b>Total Project Escalation</b>	532,137	-	3,519	20,930	23,741	34,084	74,485	88,622	93,326	54,891	21,431	34,105	43,355	25,071	14,576
<b>Total Revised Project Cash Flow</b>	7,336,888	21,723	100,905	340,003	398,551	349,061	562,946	537,569	511,965	656,378	952,397	1,335,245	965,395	463,740	141,010
<b>Cumulative Project Cash Flow(Revised)</b>		21,723	122,629	462,632	861,183	1,210,244	1,773,190	2,310,759	2,822,724	3,479,101	4,431,498	5,766,743	6,732,139	7,195,878	7,336,888
<b>AFUDC(Capitalized Interest)</b>	321,322	645	3,497	10,564	17,150	14,218	18,941	27,722	26,131	22,202	33,731	60,930	53,505	23,121	8,965
<b>Construction Work in Progress</b>		22,368	126,771	477,338	893,039	1,256,317	1,838,203	2,403,495	2,941,590	3,620,170	4,606,299	6,002,474	7,021,374	7,508,235	7,658,210

**X. APPENDIX 4**

**V. C. Summer Nuclear Station Units 2 & 3**

**Quarterly Report to the South Carolina Office of Regulatory  
Staff Submitted by South Carolina Electric & Gas Company  
Pursuant to Public Service Commission Order No. 2009-104(A)**

**Quarter Ending June 30, 2017**

**Appendix 4** shows the changes in the inflation indices approved in Order No. 2009-104(A). Included is a ten year history of the Handy-Whitman All Steam Index, South Atlantic Region; the Handy-Whitman All Steam and Nuclear Index, South Atlantic Region; the Handy-Whitman All Transmission Plant Index, South Atlantic Region; and the Chained GDP Index. The change in the relevant indices from the Combined Application is also provided.

## Appendix 4, Chart A

### Inflation Indices, Chart A

HW All Steam Generation Plant Index, January 2017

<u>Year</u>	<u>Index</u>	<u>Yr/Yr change</u>	<u>Three Year Average</u>	<u>Five Year Average</u>	<u>Ten Year Average</u>
2017	651	2.52%	2.76%	2.39%	3.15%
2016	635	2.58%	1.53%	2.79%	3.76%
2015	619	3.17%	2.28%	2.94%	
2014	600	-1.15%	2.73%	2.05%	
2013	607	4.84%	4.24%	3.25%	
2012	579	4.51%	2.19%	3.91%	
2011	554	3.36%	2.30%	4.73%	
2010	536	-1.29%	3.89%		
2009	543	4.83%	7.19%		
2008	518	8.14%			
2007	479	8.62%			
2006	441				

#### HW All Steam Index:

One year  
Five Year

<b>BLRA Filing Jul-07</b>	<b>Order 2010-12 <u>Jan-09</u></b>	<b>Order 2011-345 <u>Jul-10</u></b>	<b>Order 2012-884 <u>Jan-12</u></b>	<b>Order 2015-661 <u>Jul-14</u></b>	<b>Order 2016-794 <u>Jan-16</u></b>	<b>Update <u>Jan-17</u></b>
7.68%	4.83%	4.79%	4.51%	2.52%	2.58%	2.52%
5.74%	7.19%	5.31%	3.91%	3.21%	2.79%	2.39%

## Appendix 4, Chart B

### Inflation Indices, Chart B

HW All Steam and Nuclear Generation Plant Index, July 2016

<u>Year</u>	<u>Index</u>	<u>Yr/Yr change</u>	<u>Three Year Average</u>	<u>Five Year Average</u>	<u>Ten Year Average</u>
2017	652	2.52%	2.81%	2.46%	3.17%
2016	636	2.75%	1.53%	2.86%	3.80%
2015	619	3.17%	2.35%	2.95%	
2014	600	-1.32%	2.80%	2.09%	
2013	608	5.19%	4.29%	3.32%	
2012	578	4.52%	2.20%	3.87%	
2011	553	3.17%	2.30%	4.74%	
2010	536	-1.11%	3.89%		
2009	542	4.84%	7.21%		
2008	517	7.93%			
2007	479	8.86%			
2006	440				

#### HW All Steam/Nuclear Index:

One year  
Five Year

<b>BLRA Filing <u>Jul-07</u></b>	<b>Order 2010-12 <u>Jan-09</u></b>	<b>Order 2011-345 <u>Jul-10</u></b>	<b>Order 2012-884 <u>Jan-12</u></b>	<b>Order 2015-661 <u>Jul-14</u></b>	<b>Order 2016-794 <u>Jan-16</u></b>	<b>Update <u>Jan-17</u></b>
7.69%	4.84%	4.60%	4.52%	2.52%	2.75%	2.52%
5.75%	7.20%	5.32%	3.87%	3.21%	2.86%	2.46%



Appendix 4, Chart C

Inflation Indices, Chart C

HW All Transmission Plant Index, January 2017

<u>Year</u>	<u>Index</u>	<u>Yr/Yr change</u>	<u>Three Year Average</u>	<u>Five Year Average</u>	<u>Ten Year Average</u>
2017	630	1.78%	1.92%	1.75%	2.37%
2016	619	1.48%	1.22%	1.89%	3.11%
2015	610	2.52%	1.82%	1.88%	
2014	595	-0.34%	1.81%	0.55%	
2013	597	3.29%	2.40%	2.10%	
2012	578	2.48%	-0.07%	3.00%	
2011	564	1.44%	1.57%	4.33%	
2010	556	-4.14%	3.68%		
2009	580	7.41%	8.11%		
2008	540	7.78%			
2007	501	9.15%			
2006	459				

HW All Transmission Plant Index

One year  
Five Year

<b>BLRA Filing Jul-07</b>	<b>Order 2010-12 <u>Jan-09</u></b>	<b>Order 2011-345 <u>Jul-10</u></b>	<b>Order 2012-884 <u>Jan-12</u></b>	<b>Order 2015-661 <u>Jul-14</u></b>	<b>Order 2016-794 <u>Jan-16</u></b>	<b>Update <u>Jan-17</u></b>
<b>8.82%</b>	<b>7.41%</b>	<b>5.08%</b>	<b>2.48%</b>	<b>1.68%</b>	<b>1.48%</b>	<b>1.78%</b>
<b>6.86%</b>	<b>8.60%</b>	<b>5.23%</b>	<b>3.00%</b>	<b>2.63%</b>	<b>1.89%</b>	<b>1.75%</b>

Appendix 4

Inflation Indices, Chart D

GDP Chained Price Index, 2017

SERIESTYPE	UNIT	SHORT LABEL					ID	2009	2010	2011	2012	2013	2014	2015	2016
<b>Chained Price Index--Gross Domestic Product</b>															
U.S. Macro - 10 Year Baseline	(2009=100)	Chained price index-gross domestic product , Source: BEA , Units: index- 2009=100.0													
Annual Percent change							45158933	100.00	101.23	103.32	105.22	106.92	108.84	110.00	111.45
3-Year Annual Percent change									<b>1.23%</b>	<b>2.06%</b>	<b>1.84%</b>	<b>1.61%</b>	<b>1.80%</b>	<b>1.07%</b>	<b>1.32%</b>
5-Year Annual Percent change											1.71%	1.84%	1.75%	1.49%	1.39%
													<b>1.71%</b>	<b>1.68%</b>	<b>1.53%</b>
<b>Consumer Price Index, All-Urban</b>															
U.S. Macro - 10 Year Baseline	Index	Consumer price index, all-urban , Source: BLS , Units: - 1982-84=1.00													
Percent change							45158182	2.15	2.18	2.25	2.30	2.33	2.37	2.37	2.40
3-Year Annual Percent change									<b>1.40%</b>	<b>3.21%</b>	<b>2.22%</b>	<b>1.30%</b>	<b>1.72%</b>	<b>0.00%</b>	<b>1.27%</b>
5-Year Annual Percent change											2.28%	2.25%	1.75%	1.01%	0.99%
													<b>1.97%</b>	<b>1.69%</b>	<b>1.30%</b>
<b>Producer Price Index--Finished Goods</b>															
U.S. Macro - 10 Year Baseline	(1982=1.0)	Producer price index-finished goods , Source: BLS , Units: index- 1982=1.0													
Percent change							45159751	1.73	1.80	1.91	1.94	1.97	2.00	1.94	1.92
3-Year Annual Percent change									<b>4.05%</b>	<b>6.11%</b>	<b>1.57%</b>	<b>1.55%</b>	<b>1.52%</b>	<b>-3.00%</b>	<b>-1.03%</b>
5-Year Annual Percent change											3.91%	3.08%	1.55%	0.02%	-0.84%
													<b>2.96%</b>	<b>1.55%</b>	<b>0.12%</b>

	<div>BLRA Filing Jul-07</div>	Order 2010-12 Jan-09	Order 2011-345 Jul-10	Order 2012-884 Jan-12	Order 2015-661 Jul-14	Order 2016-794 Jan-16	Update Jan-17
<u>GDP Chained Price Index</u>							
One year	2.66%	2.24%	0.43%	2.11%	1.55%	1.00%	1.32%
Five Year	2.81%	2.86%	1.97%	1.69%	1.55%	1.64%	1.53%

**XI. APPENDIX 5**

**V. C. Summer Nuclear Station Units 2 & 3**

**Quarterly Report to the South Carolina Office of Regulatory  
Staff Submitted by South Carolina Electric & Gas Company  
Pursuant to Public Service Commission Order No. 2009-104(A)**

**Quarter Ending June 30, 2017**

**Appendix 5** indicates those LARs that have been submitted by SCE&G to the NRC for review. Included is the title of each LAR, a brief description of the change(s) associated with the LAR, the date the LAR was submitted to the NRC, and the status of the requests.

**Appendix 5****V.C. Summer Units 2 and 3 License Amendment Requests (LARs)**

<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 12-01 - Additional Electrical Penetration Assemblies	Provide additional penetrations of the Containment Vessel to allow sufficient space for electrical and instrument cables.	8/29/2012	Approved on 7/1/2013
LAR-12-02 - Tier 1 Table 3.3-1 Discrepancies	Conform the current ITAAC standards used to verify the shield building wall thickness to align with those approved in DCD Rev. 19.	9/26/2012	Approved on 5/30/2013
LAR 13-01 - Basemat Shear Reinforcement Design Spacing Requirements	Clarify the provisions for maximum spacing of the shear reinforcement in the basemat below the auxiliary building to be consistent with requirements shown in existing FSAR figures.	1/15/2013	Approved on 2/26/2013
LAR 13-02 - Basemat Shear Reinforcement Design Details	Revises the requirements for development of basemat shear reinforcement in the licensing basis from ACI 349 Appendix B to ACI 318-11, Section 12.6. The use of ACI 318 criteria for headed reinforcement results in longer shear ties and thicker concrete in areas below the elevator pits and a sump in the nuclear island basemat.	1/18/2013	Approved on 3/1/2013
LAR 13-03 - Turbine Building Eccentric and Concentric Bracing	Revises the turbine building main area to use a mixed bracing system using eccentrically and concentrically braced frames as a means of preventing the turbine building from collapsing onto the Nuclear Island (NI) during a seismic event. The structural design code is also changed to a code that includes adequate provisions for the new bracing system.	2/7/2013	Approved on 7/1/2013
LAR 13-04 - Reconciliation of Tier 1 Valve Differences	Reconciles valve related information contained in Tier 1 material to be consistent with corresponding Tier 2 material currently incorporated in the UFSAR.	2/7/2013	Approved on 9/3/2015

## Appendix 5

## V.C. Summer Units 2 and 3 License Amendment Requests (LARs)

Topic	Description of Change	Submittal Date	Status
LAR 13-05 - Structural Modules Shear Stud Size and Spacing	Revises Note 2 of UFSAR Figure 3.8.3-8, Sheet 1, which presents typical structural wall module details. This information needs to be changed to be consistent with the design basis calculations.	2/14/2013	Approved on 5/23/2013
LAR 13-06 - Primary Sampling System Changes	Alters the design of the Primary Sampling System (PSS) by replacing a check valve with a solenoid-operated gate valve, modifying the PSS inside-containment header and adding a PSS containment penetration.	2/7/2013	Approved on 8/22/2013
LAR 13-07 - Changes to the Chemical and Volume Control System (CVS)	Alters the design of the Chemical and Volume Control System (CVS) by adding/changing valves, separating the zinc and hydrogen injection paths and relocating the zinc injection point.	3/13/2013	Approved on 2/24/2014
LAR 13-08 - Module Obstructions and Details	LAR was withdrawn from NRC review. <i>Superseded by LAR 13-20.</i>	2/28/2013	Withdrawn
LAR 13-09 - Annex/Radwaste Building Layout Changes	Updates column line numbers on Annex Building Figures and changes the configuration of the Radwaste building by adding three bunkers for storage and merging two rooms.	2/27/2014	Approved on 2/6/2017
LAR 13-10 - Human Factors Engineering Integrated System Validation Plan	Revises referenced document APP-OCS-GEH-320 from Revision D to Revision 2.	3/13/2013	Approved on 7/31/2014
LAR 13-11 - NI Wall Reinforcement Criteria	Revises structural code criteria for anchoring reinforcement bar within the NI walls (adopts ACI-318 for this purpose).	3/26/2013	Approved on 6/6/2013

The gaps in LAR number sequencing are due to the order of submittal to the NRC.

**Appendix 5****V.C. Summer Units 2 and 3 License Amendment Requests (LARs)**

<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 13-12 - Fire Area Boundary Changes	Revises various information to support fire area boundaries (HVAC information, stairwell changes, and other layout changes).	7/17/2013	Approved on 9/9/2014
LAR 13-13 - Turbine Building Layout Changes	Revises the door location, clarifies column line designations, changes floor to ceiling heights and increases elevations and wall thickness in certain areas.	7/30/2013	Approved on 5/12/2014
LAR 13-14 - Turbine Building Battery Room and Electrical Changes	Revises the Non-Class 1E dc and Uninterruptible Power Supply System (EDS) and Class 1E dc and Uninterruptible Power Supply System (IDS) by: (1) Increasing EDS total equipment capacity, component ratings, and protective device sizing to support increased load demand, (2) Relocating equipment and moving Turbine Building (TB) first bay EDS Battery Room and Charger Room. The floor elevation increases from elevation 148'-0" to elevation 148'-10" to accommodate associated equipment cabling with this activity, and (3) Removing the Class 1E IDS Battery Back-up tie to the Non-Class 1E EDS Battery.	10/2/2013	Approved on 10/24/2014
LAR 13-16 - Revision to Human Factors Engineering Design Verification Plan (GEH-120)	Revises referenced document APP-OCS-GEH-120 from Revision B to Revision 1.	9/25/2013	Approved on 7/31/2014
LAR 13-17 - Revision to Human Factors Engineering Task Support Verification (GEH-220)	Revises referenced document APP-OCS-GEH-220 from Revision B to Revision 1.	9/25/2013	Approved on 7/31/2014

*The gaps in LAR number sequencing are due to the order of submittal to the NRC.*

**Appendix 5****V.C. Summer Units 2 and 3 License Amendment Requests (LARs)**

<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 13-18 - Revision to Human Factors Engineering Issue Resolution Plan	Revises APP-OCS-GEH-420 to make a number of changes in order to refine the process for capturing and resolving Human Engineering Discrepancies (HEDs) from that process document as described in Revision B.	10/3/2013	Approved on 7/31/2014
LAR 13-19 - Revision to Human Factors Engineering Plan	Revises APP-OCS-GEH-520 to make a number of changes in order to confirm aspects of the HSI and OCS design features that could not be evaluated in other Human Factors Engineering (HFE) V&V activities.	10/3/2013	Approved on 7/31/2014
LAR 13-20 - Modules / Stud Channel Obstructions Revision	Revises requirements for design spacing of shear studs and wall module trusses and the design of structural elements of the trusses such as angles and channels. These revisions are to address interferences and obstructions.	7/17/2013	Approved on 11/19/2013
LAR 13-21 - CA03 Module Design Differences	Corrects inconsistencies between Tier 2* and Tier 2 information.	2/2/2014	Approved on 4/17/2015
LAR 13-22 - Annex Building Structure and Layout Changes	The proposed changes would revise the Combined Licenses (COLs) by (a) installing an additional nonsafety-related battery, (b) revising the annex building internal configuration by converting a shift turnover room to a battery room, adding an additional battery equipment room, and moving a fire area wall, (c) increasing the height of a room, and (d) increasing certain floor thicknesses. The proposed changes include reconfiguring existing rooms and related room, wall, and access path changes.	12/4/2014	Approved on 10/23/2015

**Appendix 5****V.C. Summer Units 2 and 3 License Amendment Requests (LARs)**

<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 13-23 - Reinforced Concrete (RC) to Steel Plate Composite Construction (SC) Connections	The proposed amendment would revise Tier 2* and associated Tier 2 material related to the design details of connections in several locations between the steel plate composite construction (SC) used for the shield building and the standard reinforced concrete (RC) walls, floors, and roofs of the auxiliary building and lower walls of the shield building.	7/11/2014	Approved on 12/16/2014
LAR 13-24 - Containment Internal Floor Module Connections	The amendment request proposes to depart from UFSAR text and figures that describe the connections between floor modules and structural wall modules in the containment internal structures.	6/16/2016	Under NRC Review
LAR 13-25 - Tier 1 Editorial and Consistency Changes	Revises information to correct consistency and editorial issues. This submittal does not contain any technical changes.	7/2/2013	Approved on 7/31/2014
LAR 13-26 - EP Rule Changes	Revision to the Emergency Plan in order to comply with regulatory changes enacted by the Nuclear Regulatory Commission (NRC) in the Final Rule. These changes include the addition of text that 1) clarifies the distance of the Emergency Operations Facility (EOF) from the site, 2) updates the content of exercise scenarios to be performed at least once each exercise cycle, and 3) requires the Evacuation Time Estimate (ETE) to be updated annually between decennial censuses.	12/17/2013	Approved on 6/20/2014



**Appendix 5****V.C. Summer Units 2 and 3 License Amendment Requests (LARs)**

<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 13-27 - Control Rod Drive Mechanism Latching Relays	The proposed change would revise Combined License (COL) numbers NPF-93 and NPF-94 for Virgil C. Summer Nuclear Station, Units 2 & 3, respectively, to specify the use of Control Rod Drive Mechanism (CRDM) latching control relays (referred to as control relays herein) in lieu of field breakers to open the CRDM motor generator (MG) set generator field on a diverse actuation system (DAS) signal.	10/30/2014	Approved on 6/10/2015
LAR 13-28 - Piping Line Number Additions, Deletions, and Functional Capability Re-designation	The proposed changes revise the Combined License (COL) in regard to changes to the Automatic Depressurization System (ADS), the Passive Containment Cooling System (PCS), the Passive Core Cooling System (PXS), the Normal Residual Heat Removal System (RNS), the Containment Air Filtration System (VFS), Spent Fuel Pool Cooling System (SFS) and the Sanitary Discharge System (SDS) piping line numbers to reflect the as-designed configuration resulting from changes in piping layout or rerouting. The changes consist of adding or deleting piping line numbers of existing piping lines, or updating the functional capability classification of existing process flow lines for the tables.	12/18/2014	Approved on 1/20/2016
LAR 13-29 - Consolidation of IDS Spare Battery Termination Boxes	The proposed changes revise COLs concerning the Class 1E dc and Uninterruptible Power Supply System (IDS). The proposed changes replace four Spare Termination Boxes (IDSS-DF-2, IDSS-DF-3, IDSS-DF-4, and IDSS-DF-5) with a single Spare Battery Termination Box (IDSS-DF-3), and make minor raceway and cable routing changes.	12/19/2014	Approved on 4/25/2016
LAR 13-30 - Ventilation System Changes	Withdrew LAR during NRC review, see letter NND-17-0409.	12/21/2016	Withdrawn

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<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 13-31 - Relocation of Air Cooled Chiller Pump 3, VWS-MP-03	The proposed changes modify the design of the low capacity Central Chilled Water Subsystem (VWS) by relocating Air Cooled Chiller Pump 3 (VWS-MP-03) and its associated equipment, including a new chemical feed tank, from the Auxiliary Building to the Annex Building.	10/21/2015	Approved on 3/1/2017
LAR 13-32 - WLS Changes	Clarifies the description of the WLS, including changing depiction of valves to be consistent with Tier 1 figure conventions, ensuring consistency between Tier 1 and Tier 2 descriptions, and clarifying the safety classification of the drain hubs.	8/30/2013	Approved on 1/8/2014
LAR 13-33 - Passive Core Cooling System (PXS) Condensate Return	Withdrew LAR after NRC review, see letter NND-16-0200.	7/8/2014	Withdrawn
LAR 13-34 - Clarification of Tier 2* Material in HFE Documents	The proposed changes reclassify portions of the five Tier 2* Human Factors (HF) Verification & Validation (V&V) planning documents listed in Updated Final Safety Analysis Report (UFSAR) Table 1.6-1 and Chapter 18, Section 18.11.2.	3/19/2014	Approved on 10/8/2014
LAR 13-35 - Update of Common Qualified (Common Q) Platform Software Program Manual and Topical Report	Select document revisions are being adopted for the AP1000 Protection and Safety Monitoring System (PMS) by adding them to the AP1000 licensing basis. This license amendment request (LAR) requests approval of the new and revised Tier 2 and Tier 2* UFSAR text.	3/4/2016	Under NRC Review

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<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 13-36 - CIM / DAS Diversity Clarification	The requested amendment proposed to depart from approved AP1000 Design Control Document (DCD) Tier 2* information as incorporated into the Updated Final Safety Analysis Report (UFSAR) by clarifying the position on design diversity, specifically human diversity, as related to the Component Interface Module (CIM) and Diverse Actuation System (DAS) design.	9/11/2014	Approved on 7/17/2015
LAR 13-37 - VCSNS Units 2 & 3 Tech Spec Upgrade	Revises Technical Specifications to closer align with the guidance of the Technical Specifications Task Force (TSTF) Writer's Guide for Plant-Specific Improved Technical Specifications, TSTF-GG-05-01, Revision 1, and with NUREG-1431, Standard Technical Specifications - Westinghouse Plants as updated by NRC approved generic changes.	12/4/2013	Approved on 11/12/2014
LAR 13-38 - ACI Code Compliance with Critical Sections Higher Elevations	Withdrawn after review with NRC-see Letter NND-13-0745.	11/7/2013	Withdrawn
LAR 13-39 - EPZ Expansion LAR	This amendment proposes a change to the VCSNS Units 2&3 Radiation Emergency Plan (Plan). VCSNS proposes the following changes to the Units 2&3 Plan: expansion of the Emergency Planning Zone (EPZ) boundary, and revisions to the Evacuation Time Estimates (ETE) analysis and the Alert and Notification System (ANS) design reports to encompass the expanded EPZ boundary.	5/18/2015	Approved on 2/5/2016

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<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 13-41 - Coating Thermal Conductivity	Revises Design Control Document (DCD) Tier 2 information as incorporated into the Updated Final Safety Analysis Report (UFSAR) to allow use of a new methodology to determine the effective thermal conductivity resulting from oxidation of the inorganic zinc (IOZ) used in the containment vessel coating system.	11/26/2013	Approved on 10/9/2015
LAR 13-42 - Tier 1 Editorial and Consistency Changes #2	Allows various changes to correct editorial errors in Tier 1 and promote consistency with the Updated Final Safety Analysis Report (Tier 2 information).	5/20/2014	Approved on 3/10/2015
LAR 14-01 - Auxiliary Building Roof and Floor Details	Departs from VCSNS Units 2 and 3 plant-specific Design Control Document (DCD) Tier 2* material contained within the Updated Final Safety Analysis Report (UFSAR) to identify design details of the floors of the auxiliary building that may vary due to design and loading conditions, in accordance with code requirements.	4/3/2014	Approved on 7/18/2014
LAR 14-02 - Wall 11 Design Related Changes	This amendment request proposes changes to the design of auxiliary building Wall 11 and proposes other changes to the licensing basis for use of seismic Category II structures. This submittal requests approval of the license amendment necessary to implement these changes.	12/17/2015	Approved on 5/31/2016
LAR 14-03 - Tier 2* Editorial and Clarification Changes	Departs from VCSNS Units 2 and 3 plant-specific Design Control Document (DCD) Tier 2* material contained within the Updated Final Safety Analysis Report (UFSAR) by making editorial and consistency corrections.	6/12/2014	Approved 11/20/2015

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**Appendix 5****V.C. Summer Units 2 and 3 License Amendment Requests (LARs)**

<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 14-05 - Containment Internal Structural Module Design Details	The requested amendment proposes to depart from Tier 2* information in the Updated Final Safety Analysis Report (UFSAR), plant-specific Tier 1 and corresponding COL Appendix C information, and involved UFSAR Tier 2 information to address changes in the UFSAR and design documents related to containment internal structural wall module design details.	7/17/2014	Approved on 3/12/2015
LAR 14-06 - Enclosures for Class 1E Electrical Penetrations in Middle Annulus	Departs from VCSNS Units 2 and 3 plant-specific Design Control Document (DCD) Tier 2* material contained within the Updated Final Safety Analysis Report (UFSAR) by eliminating the Division A fire zone enclosure and adding three new fire zones for Divisions B, C, and D Class 1 E electrical penetration rooms.	6/20/2014	Approved on 12/30/2014
LAR 14-07 - CA04 Structural Module ITAAC Dimensions Change	The proposed amendment would allow changes to adjust the concrete wall thickness tolerances of four Nuclear Island walls found in Tier 1.	9/25/2014	Approved on 8/24/2015
LAR 14-08 - Integrated Test Program (ITP)	The requested amendment requires changes to the Updated Final Safety Analysis Report (UFSAR) in the form of departures from the incorporated plant-specific Design Control Document (DCD) Tier 2 information, and involves changes to related plant-specific Tier 1 information with corresponding changes to the associated COL information. Many of the changes in this amendment request are done in order to conform to the Tier 1 Section 3.4 exemption request described in Enclosure 2. In that change, construction and installation testing is removed from the ITP and replaced with component testing.	10/23/2014	Approved on 9/9/2015

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**Appendix 5****V.C. Summer Units 2 and 3 License Amendment Requests (LARs)**

<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 14-09 - Turbine Building Switchgear Room and Office Layout Changes	The requested amendment would depart from VCSNS Units 2 and 3 plant-specific Design Control Document (DCD) Tier 2* material contained within the Updated Final Safety Analysis Report (UFSAR) by relocating fire area rated fire barriers due to changes to the layout of the switchgear rooms and office area in the turbine building. The requested amendment would also depart from plant-specific DCD Tier 2 material that involves the proposed Tier 2* departures.	9/18/2014	Approved on 12/18/2015
LAR 14-10 - Addition of Instruments to Design Reliability Assurance Program (D-RAP)	This license amendment request proposes to modify the existing feedwater controller logic to allow the controller program to respond as required to various plant transients while minimizing the potential for false actuation. The current configuration of the feedwater control system allows the startup feedwater (SFW) pumps to start upon initiation of a reactor trip. This proposed change will align the feedwater controller logic with the guidance in the Advanced Light Water Reactor Utility Requirements Document (ALWR URD).	7/6/2015	Approved on 5/2/2016
LAR 14-11 - Debris Screen Related Dimensions	The proposed changes are to information identifying the frontal face area and screen surface area for the In-Containment Refueling Water Storage Tank (IRWST) screens, the location and dimensions of the protective plate located above the containment recirculation (CR) screens, and increasing the maximum Normal Residual Heat Removal System (RNS) flowrate through the screens.	8/12/2016	Approved on 3/27/2017

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<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 14-12 - Core Makeup Tank Volume Inconsistency	A change is proposed to revise the COL Appendix A (Technical Specifications) SR 3.5.2.2 and UFSAR to reflect a minimum CMT volume of 2487 ft <sup>3</sup> . This lower value is supported by the Small Break Loss of Coolant Accident (SBLOCA) safety analysis, the analysis in which minimum CMT volume is a critical parameter, and aligns with the current ITAAC value.	5/12/2016	Approved on 1/10/2017
LAR 14-13 - Proposed Emergency Action Levels	This LAR proposes that the license conditions be modified to allow SCE&G to submit plant-specific EALs developed using criteria from NEI 07-01, Rev 0 and NEI 99-01. The proposed changes, including the modification of VCSNS Units 2&3 License Conditions 2.D(12)(c) and submittal of the new plant-specific EALs for both units, do affect the VCSNS Units 2&3 Combined Licenses, but do not alter requirements of the Emergency Plan or Technical Specifications.	10/9/2015	Approved on 4/10/2017
LAR 14-14 - Structural Design of Auxiliary Building Floors	Changes are proposed to the Updated Final Safety Analysis Report (UFSAR) descriptions and figures to address changes in the structural design of floors, including finned floors, in the auxiliary building. Changes include proposed modifications specific to the finned floors critical section, as well as additional clarification to define how similar finned floors other than the critical section and similar concrete on steel plate floors without fins can be different in the design details.	6/16/2016	Approved on 3/28/2017
LAR 14-15 - Compressed and Instrument Air Supply Modification	The proposed change would revise the Combined Licenses (COLs) in regard to removing a supply line from the Compressed and Instrument Air System (CAS) to the generator breaker package and involves changes to related plant-specific Tier 1 information, with corresponding changes to associated COL Appendix C information.	10/30/2014	Approved on 4/27/2016

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**Appendix 5****V.C. Summer Units 2 and 3 License Amendment Requests (LARs)**

<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 14-17 - Core Reference Report Incorporation	This amendment is requested in order to incorporate WCAP-17524-P-A, Revision 1, AP1000 Core Reference Report.	3/14/2016	Approved on 9/20/2016
LAR 14-18 - Containment Hydrogen Igniter Changes	The proposed departures consist of changes to plant-specific Tier 1 (and COL Appendix C) tables and UFSAR tables, text, and figures related to the addition of two hydrogen igniters above the In-Containment Refueling Water Storage Tank (IRWST) roof vents to improve hydrogen burn capabilities, incorporating consistency changes to a plant-specific Tier 1 table to clarify the minimum surface temperature of the hydrogen igniters and igniter location, removal of hydrogen igniters from the Protection and Safety Monitoring System (PMS) from a plant-specific Tier 1 table, and clarification of hydrogen igniter controls in a Tier 1 table.	5/6/2015	Approved on 11/21/2016
LAR 14-19 - HFE OSA Task Update and Removal of WCAP-15847	Tier 2* document WCAP-15847 identifies documents that were used to support the AP1000 Design Certification. These documents have either been superseded or discontinued. Therefore, an amendment is being proposed to implement the necessary Tier 2* changes to delete WCAP-15847 from the UFSAR. In addition to this change, a Human Factors Engineering (HFE) Operational Sequence Analysis (OSA) task related to the Automatic Depressurization System (ADS) needs to be clarified.	1/27/2015	Approved on 6/2/2015



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<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 15-01 - HFE V&V Plan Updates to Support ISV	The proposed changes will resolve inconsistencies and implement changes identified during the review of Human Factors (HF) Verification and Validation (V&V) plans. These changes involve revising Tier 2* information contained within the Human Factors Engineering (HFE) Design Verification, Task Support Verification and Integrated System Validation (ISV) plans.	2/10/2015	Approved on 9/23/2015
LAR 15-03 - Main Control Room Emergency Habitability System (VES) Design Changes	The proposed changes revise the COLs concerning the design details of the Main Control Room Emergency Habitability System (VES). These proposed changes would revise ASME safety classification and transition location, equipment orientation and removal, and identification of the number of emergency air storage tanks.	6/30/2015	Approved on 6/2/2016
LAR 15-04 - Diverse Actuation System (DAS) Cabinet Changes	The proposed changes revise the licensing basis of the COLs to modify the design of the Diverse Actuation System (DAS) to be consistent with the DAS fire-induced spurious actuation (smart fire) and single point failure criteria. The DAS is proposed to be revised by reconfiguring the signal processing in the two processor cabinets currently located in the Annex Building and relocating the cabinets to the Auxiliary Building. The proposed changes also eliminate the instrument cabinet located in the Auxiliary Building.	11/4/2015	Approved on 8/19/2016
LAR 15-05 - Tier 1 Editorial and Consistency Changes	The proposed changes would revise the Combined Licenses (COLs) by making various nontechnical changes to COL Appendix C and the corresponding plant-specific Tier 1 information along with one involved Updated Final Safety Analysis Report (UFSAR) Tier 2 change and one typographical change to COL paragraph 2.D.	5/16/2016	Approved on 11/25/2016

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<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 15-07 - Reclassification of Tier 2* Information on Fire Area Figures	The requested amendment and exemption identify portions of the licensing basis that would more appropriately be classified as Tier 2, specifically the Tier 2* information on Fire Area Figures 9A-1, 9A-2, 9A-3, 9A-4, 9A-5, and 9A-201 in the VCSNS 2 and 3 Updated Final Safety Analysis Report.	5/4/2015	Approved on 2/1/2016
LAR 15-08 - Supplemental Requirements for Mechanical Coupler Weld Acceptability	The proposed change is that, using the AISC N690-1994 SLC of 1.6, rebar sizes #4, #5, and #6 C2/C3J couplers demonstrate the required weld capacity through analysis. For rebar sizes #7 through #11 C2/C3J couplers, this activity proposes testing as permitted by AISC N690-1994 Section Q1.22.2 to demonstrate the weld capacity for 125% of the specified yield strength loading of the rebar by performing a series of a minimum of six static and three cyclic tests on representative samples of each of the five sizes of the coupler-rebar- weld system.	8/24/2015	Approved on 11/12/2015
LAR 15-09 - Use of AWS D1.1-2000 Criteria for Structural Welds	The requested amendment proposes to depart from Tier 2* and associated Tier 2 information in the Updated Final Safety Analysis Report (UFSAR) (which includes the plant-specific DCD Tier 2 information) to revise the application of American Institute for Steel Construction (AISC) N690-1994, Specification for the Design, Fabrication and Erection of Steel Safety-Related Structures for Nuclear Facilities, to allow use of American Welding Society (AWS) D1.1-2000, Structural Welding Code-Steel, in lieu of the AWS D1.1-1992 edition identified in AISC N690-1994.	5/26/2015	Approved on 9/1/2015

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<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 15-10 - Resolution of Auxiliary Building Wall Thickness and Description Inconsistencies	The proposed changes are to the auxiliary building structural design, specifically the design thicknesses of the auxiliary building column line 1 wall and column line I wall, and the location description for the auxiliary building labyrinth wall.	10/27/2016	Under NRC Review
LAR 15-11 - Boric Acid Storage Tank Suction Point ITAAC Changes	The proposed departures consist of changes to plant-specific UFSAR Figure 9.3.6-1 Sheet 2 of 2 and COL Appendix C Table 2.3.2-4 related to the configuration of the boric acid storage tank (BAST) suction point. The change also aligns the Tier 1 Chemical and Volume Control System (CVS) makeup flow rate with previously approved Tier 2 information.	9/29/2016	Approved on 5/24/2017
LAR 15-15 - Radiologically Controlled Area Ventilation System (VAS) Design Changes	The requested amendment proposes changes to the Radiologically Controlled Area Ventilation System (VAS) configuration and equipment list by relocating one radiation monitor and adding one radiation monitor.	12/17/2015	Approved on 10/31/2016
LAR 15-17 - Addition of New Turbine Building Sump Pumps to ITAAC	The proposed amendment would depart from plant-specific Tier 1 information by adding two turbine building sump pumps to accommodate the increased flow that will be experienced during condensate polishing system rinsing operations. The proposed change also indicates that there is more than one main turbine building sump. Because flow into the turbine building sumps may be radiologically contaminated, the turbine building sump pumps will cease operation if a high radiation signal is present.	9/30/2015	Under NRC Review

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<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 15-18 - Revision to VCSNS Units 2 and 3 Plant-Specific Emergency Planning ITAAC	Changes to the plant-specific emergency planning ITAAC are proposed to remove the copies of DCD Table 7.5-1, "Post-Accident Monitoring System," and FSAR Table 7.5-201, "Post-Accident Monitoring System," and to replace the references to DCD Table 7.5-1 and FSAR Table 7.5-201 with UFSAR Table 7.5-1 in Table C.3.8-1 for ITAAC Numbers C.3.8.01.01.01, C.3.8.01.05.01.05 and C.3.8.01.05.02.04.	10/1/2015	Approved on 5/2/2016
LAR 15-19 - Proposed Revision to Technical Specifications (TS) Section 5.0 Regarding Shift Supervisor Title Change	The proposed amendment will change Technical Specifications (TS) Section 5.0, "Administrative Controls" by revising the Shift Supervisor title to Shift Manager.	10/22/2015	Approved on 2/29/2016
LAR 15-20 - Increased Concrete Thickness Tolerance for Column Line J-1 and J-2 Walls above 66'-6"	The proposed change revises COL Appendix C (and plant-specific DCD Tier 1) Table 3.3-1 to change the tolerance for the concrete thickness of the column line J-1 and J-2 walls from $\pm 1$ inch to a tolerance of -1 inch and +4 inch for a length of 24 inches at the interface of these reinforced concrete walls to structural module connections at the CA20 module.	1/14/2016	Approved on 5/31/2016
LAR 15-21 - Use of Localized Shoring for Composite Floors and Roof in the Auxiliary Building	The proposed change is to allow use of shoring for the metal deck in the vicinity of penetrations and other openings and as temporary supports in place of an incomplete wall.	1/19/2016	Approved on 8/25/2016
LAR 16-01 - Pressurizer Surge Line Testing	The proposed changes to the UFSAR eliminate pressurizer spray line monitoring during pressurizer surge line first plant only testing. In addition, these proposed changes correct inconsistencies in testing purpose, testing duration, and the ability to leave equipment in place following the data collection period.	9/15/2016	Under NRC Review

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<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 16-02 - Passive Core Cooling System (PXS) Design Changes to Address Potential Gas Intrusion	The requested amendment proposes changes to the passive core cooling system (PXS), the normal residual heat removal system (RNS) and containment air filtration system (VFS) piping layout and routing design information.	6/2/2016	Approved on 11/25/2016
LAR 16-03 - Auxiliary Building Roof Rebar Configuration Design	The requested amendment proposes to depart from Tier 2* information in the Updated Final Safety Analysis Report (UFSAR) (which includes the plant-specific DCD Tier 2 information) related to the roof rebar configuration design of the auxiliary building.	6/28/2016	Under NRC Review
LAR 16-04 - PMS Logic Changes for Source Range Flux Doubling	This license amendment request (LAR) involves updates to the Protection and Safety Monitoring System (PMS) design to align it with the requirements in IEEE 603-1991, "IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations." The PMS functional logic for blocking and resetting the source range neutron flux doubling signal requires revision to fully comply with this standard.	7/19/2016	Approved on 4/10/2017
LAR 16-05 - Slab Thickness Changes between Column Lines I to J-1 and 2 to 4 at Elevation 153'-0"	The requested amendment proposes to change thickness of one floor in the auxiliary building located between Column Lines I to J-1 and 2 to 4 at Elevation 153'-0".	7/5/2016	Under NRC Review
LAR 16-06 - Passive Core Cooling System (PXS) Condensate Return	The proposed amendment would revise the licensing basis information to reflect an increase in the efficiency of the return of condensate utilized by the passive core cooling system (PXS) to the in-containment refueling water storage tank (IRWST) to support the capability for long-term cooling.	11/18/2016	Approved on 2/28/2017

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<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 16-07 - Addition of Density Compensation to Reactor Trip System (RTS) Reactor Coolant Flow Signal	The requested amendment proposes to depart from UFSAR text by adding compensation, for changes in reactor coolant density using the $\Delta T$ power signal, to the reactor coolant flow input signal for the low reactor coolant flow trip function of the Reactor Trip System (RTS). Additionally, Technical Specification (TS) Surveillance Requirement (SR) 3.3.1.3 is added to the surveillances required for the Reactor Coolant Flow-Low reactor trip in TS Table 3.3.1-1, Function 7.	7/11/2016	Approved on 3/20/2017
LAR 16-08 - Automatic Depressurization System (ADS) Stage 2, 3 & 4 Valve Flow Area Changes and Clarifications	The requested amendment proposes changes to a plant-specific Tier 1 (and COL Appendix C) table and UFSAR tables to clarify the flow area for the Automatic Depressurization System (ADS) fourth stage squib valves and to reduce the minimum effective flow area for the second and third stage ADS control valves.	9/2/2016	Approved on 3/17/2017
LAR 16-09 - Nuclear Instrumentation System Excore Detector Surface Material Inspection Clarification	The requested amendment proposes clarifications to a plant-specific Tier 1 (and COL Appendix C) table and a UFSAR table in regard to the inspections of the excore source, intermediate, and power range detectors.	11/16/2016	Approved on 4/17/2017
LAR 16-10 - Shield Building Roof Changes	The proposed changes to the shield building roof will require changes to Updated Final Safety Analysis Report (UFSAR) information, which involve changes to plant-specific Tier 1, and corresponding changes to COL Appendix C, and changes to Tier 2* information.	11/21/2016	Under NRC Review

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<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 16-11 - NDE for Welds of Stainless Steel Couplers to Embedment Plates	The proposed departures consist of changes to Tier 2* information in the UFSAR to clarify how the quality and strength of a specific set of couplers welded to stainless steel embedment plates, already installed and embedded in concrete, is demonstrated through visual examination and static tension testing, in lieu of the nondestructive examination requirements of American Institute of Steel Construction (AISC) N690.	9/20/2016	Under NRC Review
LAR 16-12 - Incorporate Revisions to WCAP-17179 in UFSAR Appendix 7A	The proposed changes revise the Combined Licenses (COLs) to clarify information in WCAP-17179, "AP1000® Component Interface Module Technical Report" which demonstrates design compliance with licensing bases requirements. The requested amendment also proposes a change to the Component Interface Module (CIM) internal power supply which will enable proper functioning of the field programmable gate arrays (FPGA).	9/15/2016	Approved on 4/12/2017
LAR 16-13 - Fire Pump Head and Diesel Fuel Day Tank Changes	The proposed changes to COL Appendix C (and corresponding plant-specific DCD Tier 1 and Tier 2 information) involve changes to the required head for the two fire protection system (FPS) fire pumps and to the minimum volume of the diesel-driven fire pump's fuel day tank as described in the design commitment of Inspections, Tests, Analyses, and Acceptance (ITAAC) 2.3.04.08 and 2.3.04.09.	9/8/2016	Approved on 1/27/2017
LAR 16-14 - Design Reliability Assurance Program (D-RAP) Changes	The proposed changes involve changes to the Design Reliability Assurance Program (D-RAP) to identify the covers for the IRWST vents and overflow weirs as the risk-significant components included in the D-RAP and to differentiate between the rod drive motor-generator (MG) sets field control relays and the rod drive power supply control cabinets in which the relays are located.	9/22/2016	Approved on 4/11/2017

*The gaps in LAR number sequencing are due to the order of submittal to the NRC.*



**Appendix 5****V.C. Summer Units 2 and 3 License Amendment Requests (LARs)**

<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 16-15 - ADS and IRWST Injection Block	The requested amendment proposes changes to provide additional design details related to the automatic depressurization system (ADS) actuation blocking device, which is used to reduce the potential for spurious actuations of the ADS valves.	11/28/2016	Under NRC Review
LAR 16-16 - IDS Fuse Isolation Panel Additions	The proposed changes revise the details of the Class 1E dc and uninterruptible power supply system (IDS), specifically adding seven Class 1E fuse panels to the IDS design. These proposed changes provide electrical isolation between the non-Class 1E IDS battery monitors and their respective Class 1E battery banks.	9/28/2016	Approved on 3/7/2017
LAR 16-17 - Qualified Data Processing System and Safety Display Description Changes	The proposed changes update the Protection and Safety Monitoring System (PMS) design, specifically the description of the roles of the qualified data processing system (QDPS) and the safety displays. The proposed changes add Main Control Room (MCR) safety-related display divisions A and D to plant-specific Tier 1 (and associated COL Appendix C) and the UFSAR, and correct the name of the QDPS in the UFSAR by referring to the QDPS as a system, rather than a subsystem.	10/24/2016	Approved on 2/9/2017
LAR 16-18 - Nondestructive Examination for Welds of Couplers to Carbon Steel Embedment	The proposed departure consist of changes to Tier 2* information in the UFSAR (which includes the plant-specific DCD information) to clarify how the quality and strength of a specific set of couplers welded to Carbon Steel embedment plates, already installed and embedded in concrete, is demonstrated through visual examination, static tension testing, and magnetic particle examination, in lieu of the nondestructive examination requirements of American Institute of Steel Construction (AISC) N690.	10/27/2016	Under NRC Review

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**Appendix 5****V.C. Summer Units 2 and 3 License Amendment Requests (LARs)**

<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 16-19 - Addition of Interim Amendment Request Process to License Condition 2.D.(1)	The requested amendment proposes to add to License Condition 2.D.(1) of the VCSNS Units 2 and 3 COLs an Interim Amendment Request process for changes during construction when emergent conditions are present.	11/10/2016	Under NRC Review
LAR 16-20 - IRWST Volume Changes	This activity addresses inconsistencies in the Updated Final Safety Analysis Report (UFSAR) and the Combined License (COL) Appendix A Technical Specifications for the specification of the passive core cooling system (PXS) required in-containment refueling water storage tank (IRWST) minimum water volume.	12/6/2016	Approved on 6/16/2017
LAR 16-21 - Consistency Update to the Raceway Separation Requirements in the Main Control Room (MCR) and Remote Shutdown Room (RSR)	The proposed changes are for consistency to capture raceway separation requirements in the MCR and RSR in accordance with the UFSAR.	12/21/2016	Under NRC Review
LAR 17-01 - Classification of Nonsafety-Related Instrumentation	The proposed change revises the UFSAR to address the seismic Category and AP1000 equipment class of nonsafety-related instrumentation that interfaces with safety-related pressure boundaries.	1/20/2017	Approved on 5/31/2017
LAR 17-02 - Clarification of Raceway and Raceway System Designations	The proposed changes include revising licensing basis text in COL Appendix C and UFSAR Tier 2 that refers to raceways with an electrical classification, revising licensing basis text in COL Appendix C to change the reference from fiber optic cables to communication cables, and revising ITAAC acceptance criteria to remove ambiguity as to the location of inspected electrical cables.	2/16/2017	Under NRC Review
LAR 17-03 - Hydrogen Venting from Passive Core Cooling System (PXS)	The proposed changes include revising the locations for the hydrogen venting primary openings in the passive core cooling system (PXS) valve/accumulator rooms inside containment.	2/15/2017	Under NRC Review

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**Appendix 5****V.C. Summer Units 2 and 3 License Amendment Requests (LARs)**

<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 17-04 - Engineered Safety Features Actuation Changes for Containment Vacuum Relief	The proposed changes to TS and departures from Tier 2 information in the UFSAR modify engineered safety features logic to automatically reset the manual containment vacuum relief actuation, so that operator action is not required when containment pressure returns to normal. Additionally, logic is added so that containment vacuum relief cannot be manually actuated without low containment pressure.	2/27/2017	Under NRC Review
LAR 17-05 - Clarification of Protection and Safety Monitoring System (PMS) Interdivisional Cables in Auxiliary Building Fire Areas	The proposed changes to COL Appendix C (and corresponding plant-specific DCD Tier 1) affect Table 3.3-3, which identifies Class 1E divisional cables present in various Auxiliary Building Nuclear Island fire areas. The table does not address Class 1E protection and safety monitoring system (PMS) interdivisional fiber-optic cables that are terminated in certain fire areas and therefore requires clarification to facilitate future ITAAC closure.	3/30/2017	Under NRC Review
LAR 17-06 - Combined Operational Support Center	The proposed amendment would revise the licensing basis information to reflect combining the Units 2 & 3 individual operational support centers (OSCs) into a common OSC serving both units, and standardizing the titles of the combined OSC and the offsite notification system.	6/28/2017	Under NRC Review
LAR 17-07 - Addition of In-Containment Refueling Water Storage Tank (IRWST) Lower Narrow Range Level Instrumentation	The proposed changes revise the Protection and Safety Monitoring System (PMS) including the reactor trip system (RTS) and the engineered safety feature actuation system (ESFAS), the passive core cooling system (PXS), the steam generator blowdown system (BDS), and the spent fuel pool cooling system (SFS).	5/2/2017	Under NRC Review

## Appendix 5

## V.C. Summer Units 2 and 3 License Amendment Requests (LARs)

Topic	Description of Change	Submittal Date	Status
LAR 17-08 - Standardization of Instrumentation Setpoint Nomenclature	The proposed changes revise the Combined Licenses (COLs) concerning standardizing the Protection and Safety Monitoring System (PMS) setpoint nomenclature. No setpoint values or PMS alarms and actuations are proposed to be changed by this activity.	6/12/2017	Under NRC Review
LAR 17-09 - PXS/ADS Line Resistance Changes	The proposed changes affect the Combined License (COL) concerning the Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) for the fourth-stage automatic depressurization system (ADS) valves and associated piping; the in-containment refuelingwater storage tank (IRWST) injection and drain lines; and containment recirculation lines.	4/12/2017	Under NRC Review
LAR 17-10 - Pipe Rupture Hazard and Flooding Analyses	The requested amendment proposes changes to the COL, COL Appendix C (and to plantspecific Tier 1 information) and associated Tier 2 information to address mitigation of fire protection system flooding of the Auxiliary Building identified during completion of the pipe rupture hazards analysis (PRHA).	5/1/2017	Under NRC Review
LAR 17-11 - Revision of ITAAC 2.6.03.04i, Class 1E Motor-Operated Valve Terminal Voltage Testing	LAR was withdrawn from NRC review. See NND-17-0368.	5/4/2017	Withdrawn
LAR 17-12 - Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Consolidation	The requested amendment proposes changes to COL Appendix C (and plant-specific Tier 1) to consolidate a number of ITAAC to improve efficiency of the ITAAC completion and closure process.	5/16/2017	Under NRC Review

**Appendix 5****V.C. Summer Units 2 and 3 License Amendment Requests (LARs)**

<b>Topic</b>	<b>Description of Change</b>	<b>Submittal Date</b>	<b>Status</b>
LAR 17-13 - Central Chilled Water System (VWS) Optimization Changes	The requested amendment proposes changes to COL Appendix C (and plant-specific Tier 1) to revise the minimum chilled water flow rates to the supply air handling units serving the Main Control Room (MCR) and the Class 1E electrical rooms, and the unit coolers serving the normal residual heat removal system (RNS) and chemical and volume control system (CVS) pump rooms.	6/9/2017	Under NRC Review
LAR 17-14 - Addition of Steam Generator System (SGS) Thermal Relief Valves	The requested amendment proposes changes to COL Appendix C (and plant - specific Tier 1) to add two main feedwater thermal relief valves and two start-up feedwater thermal relief valves.	5/18/2017	Under NRC Review
LAR 17-15 - Fire Protection System (FPS) Piping That Must Remain Functional Following a Safe Shutdown Earthquake (SSE)	The requested amendment proposes changes to more clearly define the boundaries and seismic requirements for the portion of the fire protection system (FPS) piping that is required to remain functional following a safe shutdown earthquake (SSE).	5/25/2017	Under NRC Review
LAR 17-17 - Chemical Addition with Reactor Coolant Pumps Not in Operation	The proposed changes revise plant-specific Tier 2 information concerning changes to the administrative controls for unborated water flow paths to the reactor coolant system that are required to support chemical additions during periods when the reactor coolant pumps are not in operation.	6/20/2017	Under NRC Review
LAR 17-18 - Containment Air Filtration Exhaust Rooms West Walls Removal	The requested amendment proposes changes to COL Appendix C (and to plant-specific Tier 1 information) and associated Tier 2 information to remove the west walls of containment air filtration exhaust rooms A and B in the annex building to facilitate ease of access to equipment in the room during installation and maintenance.	6/19/2017	Under NRC Review